

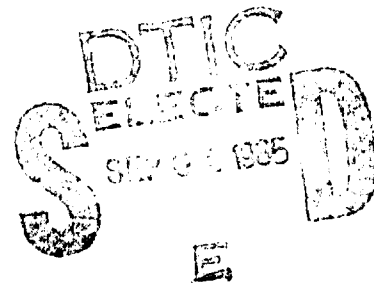
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# OPTICAL CONSTANTS



by Marvin R. Querry, Ph.D.

UNIVERSITY OF MISSOURI  
Kansas City, Missouri 64110

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<ol style="list-style-type: none"> <li>1. Sapphire (<math>Al_2O_3</math>)E//C,</li> <li>2. Sapphire (<math>Al_2O_3</math>)E+C,</li> <li>3. Oxidized aluminum mirror</li> <li>4. Iron</li> <li>5. Hematite (<math>Fe_2O_3</math>)E//C</li> <li>6. Hematite (<math>Fe_2O_3</math>)E+C</li> <li>7. Magnetite (<math>Fe_3O_4</math>)</li> <li>8. Cuprous oxide (<math>ZnO</math>) pellet</li> <li>9. Zinc oxide (<math>ZnO</math>) pellet</li> </ol>					
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10. Copper Ingot
11. Brass Ingot (90 Cu/10 Zn)
12. Brass Ingot (85 Cu/15 Zn)
13. Brass Ingot (70 Cu/30 Zn)
14. Dixon KS-2 Graphite pellet
15. Dixon HPN-2 Graphite pellet
16. Dixon 200-10 Graphite pellet
17. Asbury Micro 260 Graphite pellet
18. Dixon 1102 Intercalated Graphite pellet
19. Asbury 3222 Intercalated Graphite pellet
20. Pyrolytic Graphite (on planar face)
21. TTF/TCNQ pellet
22. Cu/TCNQ pellet
23. Li/TCNQ pellet

Final data were supplied on punched cards, and in graphical and tabular form.



## PREFACE

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## OPTICAL CONSTANTS

### 1. STATEMENT OF OBJECTIVES

The objectives were:

1. to determine optical constants in the 0.2-30  $\mu\text{m}$  wavelength region for at least 20 hitherto uncharacterized materials including (but not limited to) metals, crystalline materials, and liquids,
2. to measure the reflectance and/or transmittance spectrum of each material in the specified wavelength region,
3. to analyze all measured spectra by use of Kramers-Kronig or related techniques in order to determine spectral values of the optical constants (complex refractive index) in the specified wavelength region, and
4. to determine as appropriate for each material, chemical and physical properties such as, but not limited to; density, concentration, composition, crystalline structure, and orientation in order to adequately characterize each material.

### 2. CONCLUSIONS

We have prepared samples of 21 materials, measured 23 reflectance spectra for those materials, used Kramers-Kronig methods to compute spectral values of the complex refractive index  $n+ik$  from each of the 23 reflectance spectra, and have presented the measurements and results of the computations in graphical and tabular form. Additionally, all data that appear in the tabulations in this report have been delivered to the technical monitor, Mr. Merrill Milham, CRDC, on punched computer cards. Those data are now ready for use in Mie scattering codes to compute radiant transport through aerosol clouds that may be composed of these 21 materials.

### 3. MATERIALS INVESTIGATED

On or about 24 June 1983 the technical monitor Mr. Merrill Milham and the principal investigator formulated the final listing of the 23 materials that were investigated. Those materials were:

1. Sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) E//C (uniaxial crystal)
2. Sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) E+C (uniaxial crystal)
3. Oxidized Aluminum Mirror
4. Iron (polycrystalline)
5. Hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) E//C (uniaxial crystal)

6. Hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) E+C (uniaxial crystal)
7. Magnetite (Fe<sub>3</sub>O<sub>4</sub>) (isotropic crystal)
8. Cuprous Oxide (Cu<sub>2</sub>O powder, pellet)
9. Zinc Oxide (ZnO powder, pellet)
10. Copper Ingot
11. Brass Ingot (90%Cu/10%Zn)
12. Brass Ingot (85%Cu/15%Zn)
13. Brass Ingot (70%Cu/30%Zn)
14. Dixon KS-2 Graphite (powder, pellet)
15. Dixon HPN-2 Graphite (powder, pellet)
16. Dixon 200-10 Graphite (powder, pellet)
17. Asbury Micro 260 Graphite (powder, pellet)
18. Dixon 1102 Intercalated Graphite (powder, pellet)
19. Asbury 3222 Intercalated Graphite (powder, pellet)
20. Pyrolytic Graphite
21. TTF/TCNQ (powder, pellet)
22. Cu/TCNQ (CRDC pellet)
23. Li/TCNQ (powder, pellet)

#### 4. CHEMICAL AND/OR PHYSICAL PROPERTIES OF MATERIALS

##### 4.1 Sapphire.

Sapphire is an optically uniaxial crystal with hexagonal-R, space group 32/m structure and specific gravity of 4.02. The sapphire crystal used in this investigation was high purity premium grade  $\alpha$ -Al<sub>2</sub>O<sub>3</sub> and was obtained from Crystal Systems, Inc., 35 Congress St., Salem, Ma. 01970. A rectangular bar 2x2x4 cm<sup>3</sup> was cut along a diagonal to form two identical prisms so that the 2x2 cm<sup>2</sup> faces were unaltered by the cut. The c-axis of the crystal was parallel to one of the edges of the 2x2 cm<sup>2</sup> face. A scratch free polish on the 2x2 cm<sup>2</sup> face was made by Adolf Meller Co., P.O. Box 6001, Providence, RI 02940. Reflectance spectra obtained for this sample showed no evidence of impurities. The same sapphire prism was used for measurements of the reflectance spectra with the electric vector E of the incident radiant flux linearly polarized parallel and perpendicular to the c-axis of the crystal. The prism shape prevented radiant flux reflected by back surfaces from re-entering the reflectometer unit.

##### 4.2 Oxidized Aluminum Mirror.

The oxidized Aluminum mirror was obtained from the Perkin-Elmer Corp., and was a standard first surface mirror on a glass substrate. The mirror surface was deposited on the substrate by vacuum evaporation of aluminum. Such aluminum surfaces universally form a 50A thick surface layer of aluminum oxide when exposed to air. The oxide can be  $\gamma$ -Al<sub>2</sub>O<sub>3</sub>, and/or amorphous Al<sub>2</sub>O<sub>3</sub> (Ref. 1). As later shown in this report

we believe the reflectance spectrum of the aluminum mirror shows evidence of  $\gamma\text{-Al}_2\text{O}_3$ .

#### 4.3 Iron.

The iron sample was 1.2 cm dia. by 1 cm long, poly-crystalline, and was Aesar puratronic grade obtained from Johnson Matthey, Inc., P.O. Box 1087, Seabrook, NH 03874. The purity was 99.9985% and the specific gravity 7.87. The 1.2 cm dia. end face of the rod was mechanically polished with 6  $\mu\text{m}$  diamond paste, 0.3  $\mu\text{m}$   $\alpha\text{-Al}_2\text{O}_3$ , and 0.05  $\mu\text{m}$   $\alpha\text{-Al}_2\text{O}_3$ . A mirror surface was obtained and remained bright and untarnished for several months after the polish was applied. Reflectance spectra of the iron sample were obtained in dry air immediately after polishing. Results from a chemical analysis of the iron sample are presented in the Appendix.

#### 4.4 Hematite.

Hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) is an optically uniaxial crystal with hexagonal, space group  $32/m$  structure and specific gravity of 5.26. Two excellent crystalline samples were provided by the Geosciences Department, University of Missouri-Kansas City. One sample was cut perpendicular to the c-axis, the other parallel to the c-axis. Both samples were mechanically polished to provide metallic mirror surfaces. The hematite samples were originally from the USSR and carried the identification code USNM #1873. The specimens were obtained from the Smithsonian, Washington, D.C. as exemplary samples of hematite. The specimens were potted in a cured resin which prevented the removal of a fragment for chemical analysis.

#### 4.5 Magnetite.

Magnetite is an optically isotropic material possessing an isometric  $4/m\bar{3}2/m$  structure, chemical composition  $\text{Fe}_3\text{O}_4$ , and specific gravity 5.18. This specimen was also provided by the Geosciences Department, University of Missouri-Kansas City. The specimen was cut and mechanically polished to a metallic mirror surface.

#### 4.6 Cuprous Oxide ( $\text{Cu}_2\text{O}$ ).

The cuprous oxide sample was Aesar Puratronic grade powder obtained from Johnson Matthey, Inc., P.O. Box 1087, Seabrook, NH 03874. A chemical analysis of this material appears in the Appendix. The powder was pressed into pellets that possessed mirror surfaces. Several attempts to form 13 mm dia. pellets were unsuccessful because the pellets would always fracture when being removed from the die. We were successful in obtaining 8 mm dia. pellets pressed at pressures of 205,360 psi ( $1.416 \times 10^9$  Pa). This resulted in a pellet with  $5.71 \pm 0.15$

specific gravity. In comparison the natural mineral cuprite ( $\text{Cu}_2\text{O}$ ) is optically isotropic with isometric  $4/\text{m}32/\text{m}$  structure and specific gravity 6.14. The pellets were a red-violet color.

#### 4.7 Zinc Oxide ( $\text{ZnO}$ ).

The zinc oxide sample was Aesar Puratronic grade powder obtained from Johnson Matthey, Inc., P.O. Box 1087, Seabrook, NH 03874. A chemical analysis of this material is presented in the Appendix. The powder was pressed into 13 mm dia. disk shaped pellets that possessed mirror surfaces. The pellet having the highest reflectance at 2.5  $\mu$  wavelength was chosen for further investigation. That pellet was yellow in color, was formed at a pressure of 155,540 psi ( $1.07 \times 10^9$  Pa), and had a specific gravity of  $5.06 \pm 0.14$ . In comparison the rare natural mineral zincite ( $\text{ZnO}$ ) is optically uniaxial with Hexagonal 6mm structure and specific gravity 5.68.

#### 4.8 Copper and Brass.

One small copper ingot and three small brass ingots were obtained from OBRON, 8 N. State St., Painesville, OH 44077. OBRON manufactures metallic powders from copper and brass and achieves various colors by individual or combined use of these four basic materials. The nominal compositions of the brass samples were 90%Cu/10%Zn, 85%Cu/15%Zn, and 70%Cu/30%Zn. A chemical analysis of the copper and brass materials was made by personnel at the Environmental Trace Substances Research Center, University of Missouri. Results from those analyses are presented in the Appendix.

The specific gravity of these materials were:

copper	$8.87 \pm 0.07$ ,
90Cu/10Zn	$8.67 \pm 0.07$ ,
85Cu/15Zn	$8.49 \pm 0.07$ , and
70Cu/30Zn	$8.49 \pm 0.07$ .

A milling machine was used to scalp the copper and brass ingots. The scalped surfaces were then smoothed by use of 600 grit aluminum oxide metallographic paper. Next, the surfaces were polished with 6  $\mu$ m diamond paste, 0.3  $\mu$ m alumina, and 0.05  $\mu$ m alumina.

#### 4.9 Graphites.

Four powdered graphite samples were obtained, three of them KS-2, HPN-2, and 200-10 from the Joseph Dixon Crucible Co., Jersey City, NJ 07303, and the fourth Micro 260 from the Asbury Graphite Mills, Inc., Asbury, Warren County, NJ 08802. Chemical analysis of these graphite powders were made by the Environmental Trace Substances Research Center, University of Missouri. Results from the analyses are presented in the Appendix.



Many 13 mm dia. disk-shaped pellets were pressed from each powdered graphite sample. Pressures in the range from 97,200 psi ( $6.7 \times 10^8$  Pa) to 155,540 psi ( $1.07 \times 10^9$  Pa) were employed for this purpose. It was found that pellets formed under 97,200 psi for 30 min. possessed specular surfaces superior to those formed under higher pressure. Thus pellets formed at 97,200 psi were used for the reflectance measurements.

The specific gravity of the graphite pellets were:

Dixon KS-2	2.04+0.06
Dixon HPN-2	2.04+0.06
Dixon 200-10	2.02+0.06
Asbury Micro 260	2.00+0.06

In comparison natural graphite is optically uniaxial with hexagonal 6/m2/m2/m structure and specific gravity 2.23. Large well formed graphite crystals rarely occur in nature.

#### 4.10 Intercalated Graphite.

Two intercalated graphite samples were supplied by Dr. Turetsky, U.S. Army CRDC, Edgewood Area. Both were intercalated with a mixture of sulfuric and nitric acids. One sample was Dixon 1102 which was intercalated by Dr. Turetsky; the other was Asbury 3222 with intercalation by The Asbury Graphite Mills. Both samples were supplied in wet powder form.

Considerable difficulty was encountered in forming pellets from the intercalated Graphites. The Dixon 1102 graphite was very wet with the acids. The initial attempt to press a pellet resulted in the acids damaging the stainless steel die. Consultation with Dr. Turetsky lead to a procedure whereby the Dixon 1102 graphite was heated at 900 C for 12 hours in a closed crucible. The heat treated graphite, plus a small residue of pink colored powder remaining throughout the sample after heat treatment, was successfully pressed into a 13 mm dia. pellet. The powder was dry after the heat treatment.

The Asbury 3222 intercalated graphite had a wet appearance but did not damage the stainless steel die. However, when the pressure reached about 58,300 psi ( $2.6 \times 10^8$  Pa) the graphite would flow, resulting in beautiful metallic ribbons of extruded graphite bursting from the top of the die. This extrusion occurred around the edges of the stainless steel rams between which the graphite was placed for pressing. The rams were within a stainless steel die wherein the tolerance was such that air would not easily flow between the walls of the die and ram.

A 13 mm diameter pellet of the Asbury 3222 intercalated graphite was formed by the following procedure. The material was initially impulse pressed at a pressure of about 57,000 psi. The resultant pellet, of poor optical quality, was then ground to powder by use of a vibromill. The reground powder, it was discovered, would not flow from

the die at 58,300 psi but would flow at about 77,000 psi. By repeating the processes of impulse pressing and regrinding through four cycles we obtained a 13mm dia. pellet at a pressure of 116,600 psi ( $8.04 \times 10^8$  Pa).

The pellets of the intercalated graphites were metallic in appearance but the optical quality of their surfaces was not as good as that of the other graphite materials. This was due primarily to the larger particle size of the 1102 and 3222 graphites.

The specific gravity of the intercalated graphite pellets were:

Dixon 1102	2.20±0.06
Asbury 3222	2.11±0.06

Chemical analyses of the intercalated graphites were performed by personnel of the Environmental Trace Substance Research Center, University of Missouri. Results from those analyses are presented in the Appendix.

#### 4.11 Pyrolytic Graphite.

The pyrolytic graphite sample was also supplied by Dr. Turetsky of CRDC. The sample was a solid sheet possessing a very rough surface and a lamellar structure. The sample, however, could not be cleaved. One planar surface of the sample was smoothed by use of 600 aluminum oxide metalography paper. The sample was then polished by hand on a soft cloth by use of 0.3  $\mu$ m Alumina. The sample was then placed in distilled water in an ultrasonic cleaner to remove any residual carbon from the polished surface. A very good specular surface was achieved using this method. The sample was placed in a dry air environment at room temperature for several hours prior to obtaining the reflectance spectra.

The specific gravity of the pyrolytic graphite sample was  $2.17 \pm 0.06$ . Results from a chemical analysis of this sample are presented in the Appendix. The analysis was performed by the Environmental Trace Substances Research Center, University of Missouri.

#### 4.12 TCNQ Salts.

Three TCNQ salt samples were supplied by Dr. E. R. Riley of CRDC. Two, TTF-TCNQ and LiTCNQ were supplied in powdered form. The third, CuTCNQ, was supplied as two 13 mm dia. pellets.

The TTF-TCNQ and LiTCNQ powders were pressed into 13 mm dia. pellets at pressures of 155,540 psi ( $1.07 \times 10^9$  Pa). The pellets had very good specular surfaces. The surfaces with highest reflectance at 2.5  $\mu$ m wavelength were chosen for the reflectance measurements.

The two CuTCNQ pellets possessed relatively poor optical surfaces. However, of the four surfaces of the two pellets, the surface with the greatest reflectance at 2.5  $\mu\text{m}$  wavelength was chosen for the reflectance measurements. Attempts to repress the CuTCNQ pellet having the poorest optical surfaces resulted in a severely fractured pellet, but the surfaces were more specular after repressing. The fractured fragments of the repressed pellet were used for chemical analysis.

The specific gravity of the pellets used for the reflectance spectra were:

TTF-TCNQ	1.58 $\pm$ 0.05,
LiTCNQ	1.41 $\pm$ 0.13, and
CuTCNQ	1.52 $\pm$ 0.05.

Chemical analyses of the three TCNQ salts were performed by personnel of the Environmental Trace Substance Research Center, University of Missouri. Results from those analyses are presented in the Appendix. Also presented in the Appendix are notes from Dr. Riley relating to the chemical composition and structure, and the particle sizes and shapes of the TCNQ salts.

TABLE 1. Specific gravity of materials for which reflectance spectra were obtained.

Material	Specific Gravity
Sapphire (crystal)	4.02
Oxidized Al. (film)	?
Iron (polycrystalline)	7.86±0.01
Hematite (crystal)	5.26
Magnetite (crystal)	5.18
Cuprous Oxide (pellet)	5.71±0.15
Zinc Oxide (pellet)	5.06±0.14
Copper (ingot)	8.87±0.07
90Cu/10Zn Brass (ingot)	8.67±0.07
85Cu/15Zn Brass (ingot)	8.49±0.07
70Cu/30Zn Brass (ingot)	8.49±0.07
KS-2 Graphite (pellet)	2.04±0.06
HPN-2 Graphite (pellet)	2.04±0.06
200-10 Graphite (pellet)	2.02±0.06
Micro 260 Graphite (pellet)	2.00±0.06
1102 Intercalated Graphite (pellet)	2.20±0.06
3222 Intercalated Graphite (pellet)	2.11±0.06
Vitreous Carbon (solid)	2.17±0.06
TTF-TCNQ (pellet)	1.58±0.05
CuTCNQ (pellet)	1.52±0.05
LiTCNQ (pellet)	1.41±0.13

## 5. REFLECTANCE SPECTRA AND OPTICAL CONSTANTS

All materials were prepared for measurements of near normal incidence reflectance spectra in the 0.2-30  $\mu\text{m}$  wavelength region. However, some reflectance spectra extend to 55.55  $\mu\text{m}$ .

In the infrared region, 2.5-55.5  $\mu\text{m}$  (4,000-180  $\text{cm}^{-1}$ ), reflectance spectra were obtained by use of a Perkin-Elmer 580 spectrophotometer and specular reflectance accessory. The infrared reflectance spectra were measured relative to that of a first surface aluminum mirror. Multiplication of these relative reflectance spectra by the reflectance of aluminum provided the absolute reflectance spectra of the materials.

In the uv-vis-nir region, 0.2-2.5  $\mu\text{m}$  (50,000-4,000  $\text{cm}^{-1}$ ), reflectance spectra were obtained by use of a Cary Varian 2300 spectrophotometer and a V-W reflectance accessory that provided measurements of the absolute reflectance.

The reflectance spectra were analyzed by use of Kramers-Kronig methods in order to determine spectral values of the complex refractive indices  $n+ik$ ; i.e. the so called optical constants.

In this section we present the measured reflectance spectra and the spectral values of  $n+ik$  in graphical and tabular form.

### 5.1 Sapphire ( $\alpha\text{-Al}_2\text{O}_3$ )

In the infrared spectral region (4,000-250  $\text{cm}^{-1}$ ) the near normal incidence reflectance spectra of sapphire were obtained for the electric vector  $E$  of the incident radiant flux linearly polarized parallel and perpendicular to the  $c$ -axis of the crystal.

In the uv-vis-nir spectral region (200-2,500 nm) the near normal incidence reflectance spectrum of sapphire was obtained for unpolarized radiant flux. However, polarization characteristics of the optical components of the Cary Varian spectrophotometer are such that the "unpolarized" incident beam is  $p$  (parallel) or  $s$  (perpendicular) polarized in different spectral regions. As a general rule  $p$ -polarization is dominant in broad spectral regions. Thus the "unpolarized" reflectance spectrum of sapphire was joined, at 2,500 nm wavelength, to the  $E//C$  and  $E+C$  spectra obtained in the infrared. The "unpolarized" uv-vis-nir reflectance spectrum was altered by only  $\pm 4\%$  of the measured reflectance spectrum.

Only a single Glan-Thompson calcite polarizer was available for use with the Cary Varian spectrophotometer. There were two reasons why this polarizer could not be used for these measurements. First the polarizer proved to be unreliable in the yellow region of the visible spectrum. And second, one must use two polarizers with the Varian spectrophotometer; one in the reference beam and another in the sample

beam. We obtained some reflectance spectra in the 230-2,500 nm region for sapphire with the single polarizer in the sample beam. In the 800-1,400 nm wavelength region the reflectance of the seven aluminum mirrors in the V-W reflectance accessory falls to 37%, the sapphire reflected 7.2%, and the polarizer decreased the intensity of the sample beam by at least a factor of 0.5. Combining these factors we find that we were attempting to measure an effective absorbance of 3.87. The PbS detector of the Varian instrument was not linear at such absorbance values and the resultant spectra were very unreliable.

We ordered a replacement polarizer but as of this writing the polarizer has not arrived. Thus the polarized reflectance data could not be obtained in the uv-vis-nir.

Sapphire, however, is not strongly birefringent in the uv-vis-nir region and the joining of the "unpolarized" reflectance spectrum in the uv-vis-nir to the polarized reflectance spectra in the infrared is expected to produce relatively small error in the final values.

The reflectance spectra and values of the complex refractive indices are presented in Figs. 1-5 for E//C, in Figs. 6-10 for E+C, and in tabular form in following pages.

In the tables the columns from left to right provide the wave number ( $\text{cm}^{-1}$ ) WN, wavelength ( $\mu\text{m}$ ) WL, n, k, uncertainty in n and k (DN and DK), and the reflectance R.

Figures 11 and 12 present the first derivative of the infrared reflectance spectra for sapphire E//C and E+C, respectively. Note that minima and maxima in the first derivative spectra reveal the spectral location of the longitudinal and transverse optical phonon modes, respectively.

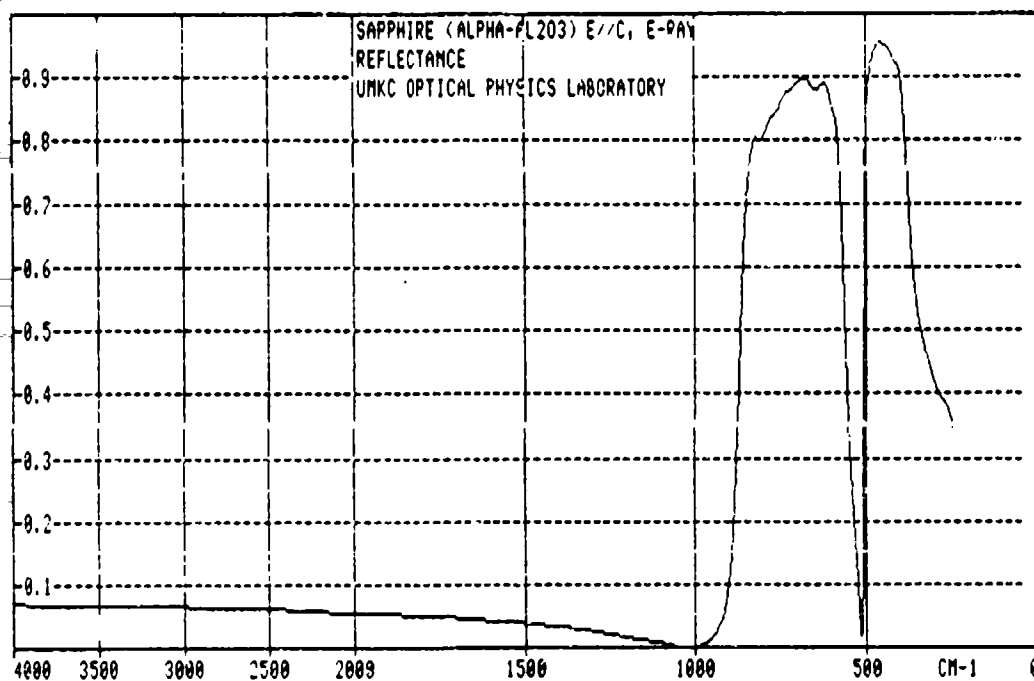


Figure 1. The infrared (4,000-180  $\text{cm}^{-1}$ ) reflectance spectrum of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) for E//C.

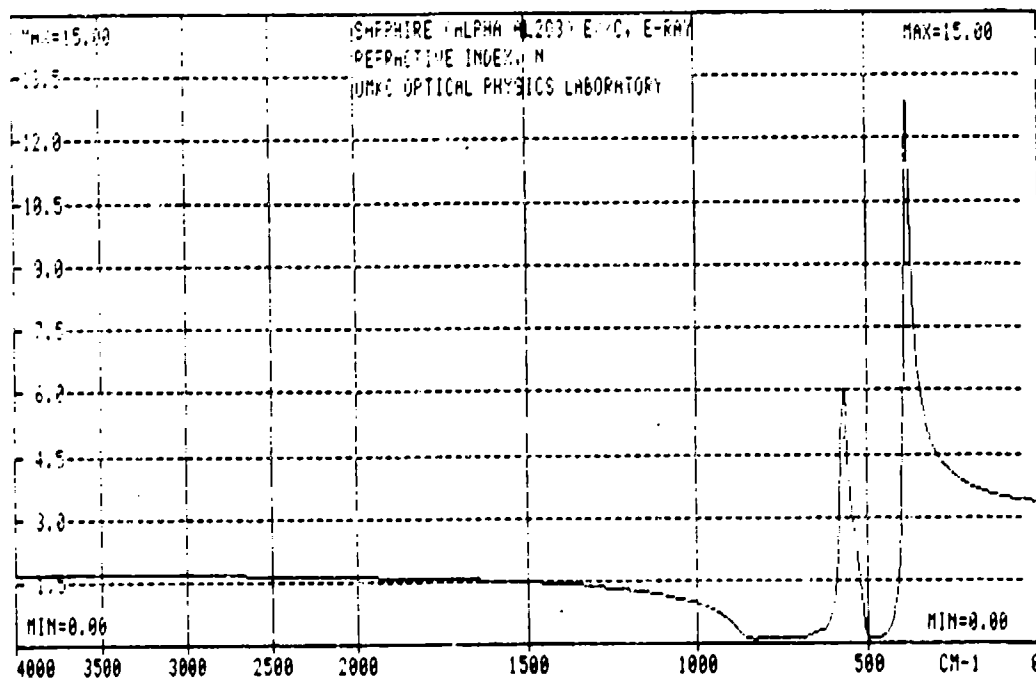


Figure 2. The infrared (4,000-180  $\text{cm}^{-1}$ ) refractive index  $n$  of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) for E//C.

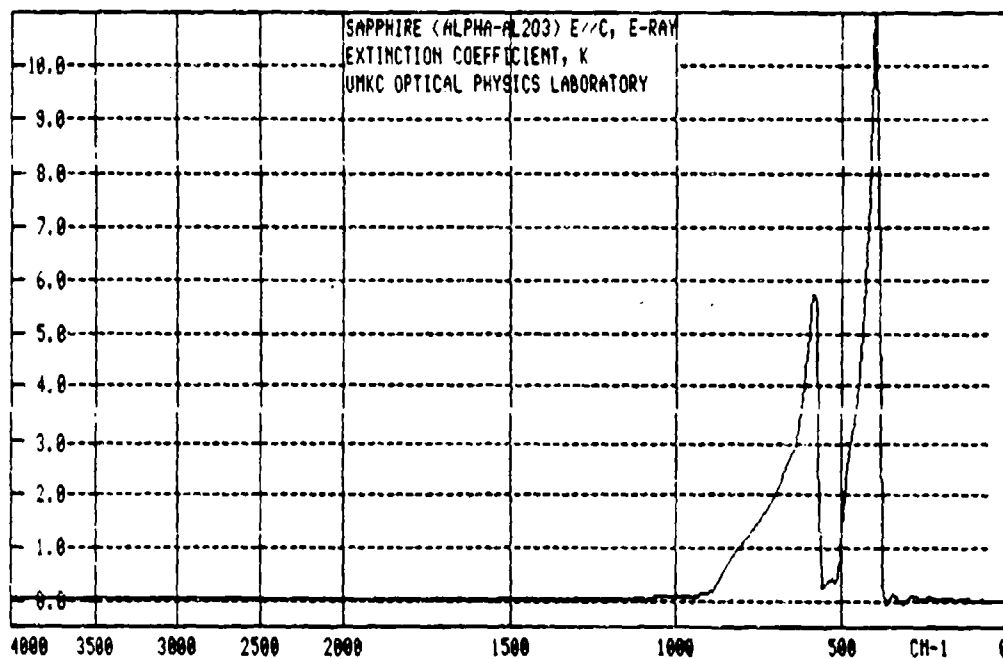


Figure 3. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) extinction coefficient  $k$  of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) for E//C.

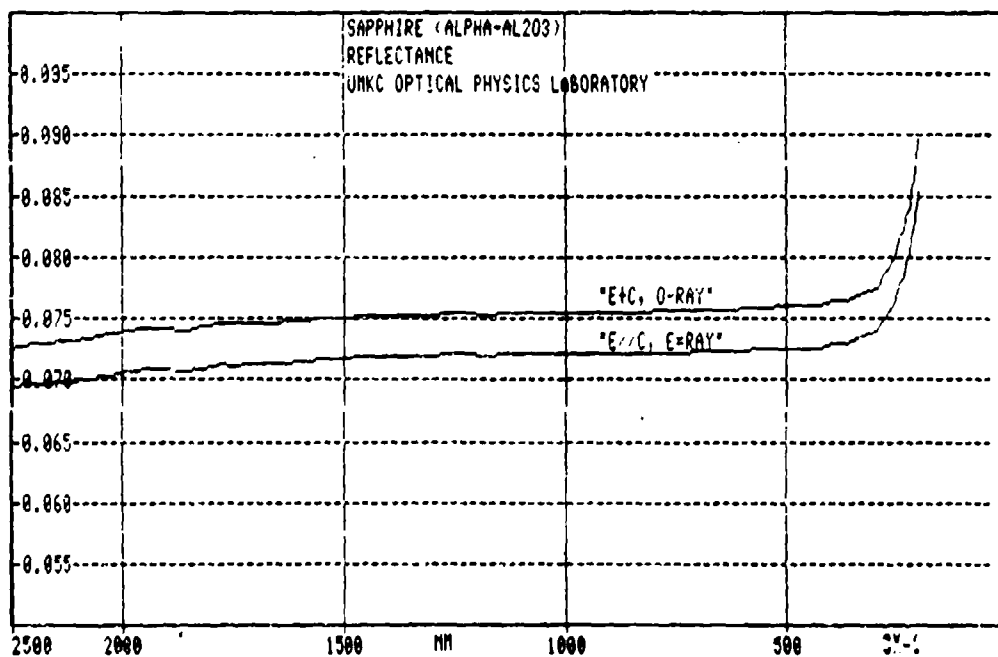


Figure 4. The uv-vis-nir ( $2,500\text{--}200\text{ nm}$ ) reflectance spectrum of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) used for E//C.



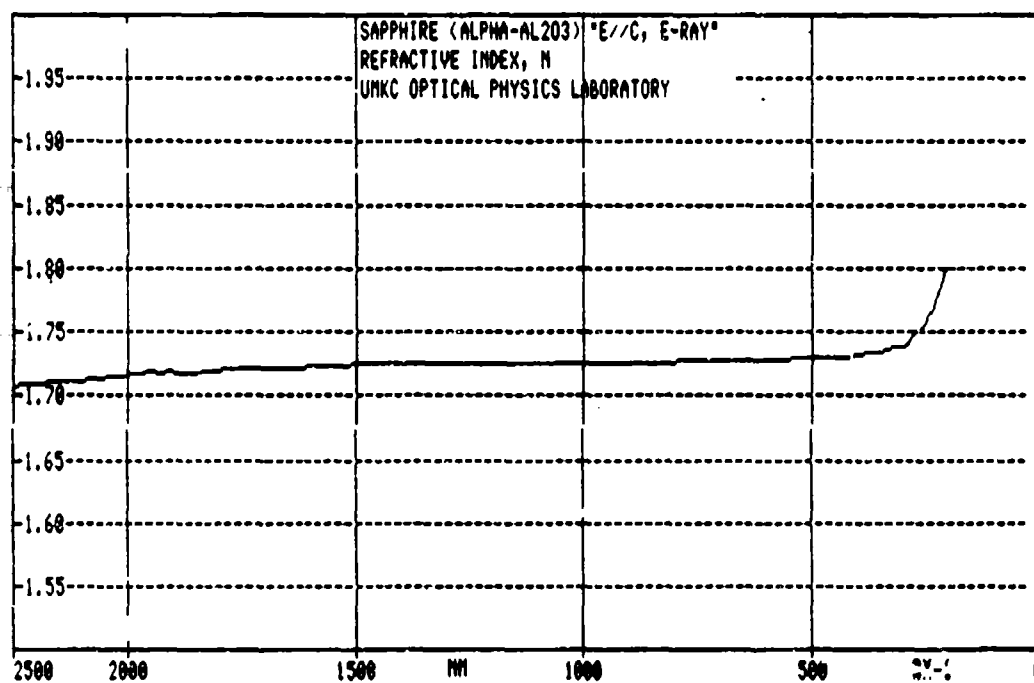


Figure 5. The uv-vis-nir (2,500-200 nm) refractive index of sapphire ( $\alpha$ -Al<sub>2</sub>O<sub>3</sub>) for E//C.

WN	WL	N	K	DN	DK	R
180.00	55.5556	3.689	0.030	0.064	0.003	0.33124
190.00	52.6316	3.727	0.037	0.066	0.003	0.33513
200.00	50.0000	3.768	0.028	0.067	0.003	0.33938
210.00	47.6190	3.814	0.016	0.069	0.001	0.34404
220.00	45.4545	3.865	0.022	0.071	0.002	0.34915
230.00	43.4783	3.921	0.042	0.073	0.004	0.35474
240.00	41.6667	3.984	0.065	0.076	0.006	0.36089
250.00	40.0000	4.055	0.053	0.079	0.005	0.36766
260.00	38.4615	4.136	0.039	0.082	0.004	0.37515
270.00	37.0370	4.226	0.048	0.086	0.005	0.38345
280.00	35.7143	4.297	0.077	0.089	0.007	0.38990
290.00	34.4828	4.389	0.088	0.093	0.009	0.39795
300.00	33.3333	4.536	0.058	0.100	0.006	0.41035
310.00	32.2581	4.717	0.003	0.108	0.000	0.42500
320.00	31.2500	4.947	-0.055	0.120	0.006	0.44285
330.00	30.3030	5.213	0.007	0.133	0.001	0.46210
340.00	29.4118	5.538	0.094	0.151	0.010	0.48410
350.00	28.5714	5.960	0.146	0.176	0.017	0.51030
360.00	27.7778	6.604	0.035	0.217	0.004	0.54525
370.00	27.0270	7.689	-0.115	0.296	0.015	0.59470
380.00	26.3158	10.005	0.246	0.506	0.038	0.67145
390.00	25.6410	13.617	5.703	0.991	1.003	0.78000
400.00	25.0000	6.251	11.810	1.035	1.108	0.87060
410.00	24.3902	2.014	9.319	0.631	0.646	0.91655
420.00	23.8095	1.109	7.392	0.392	0.463	0.92540
430.00	23.2558	0.644	6.176	0.265	0.367	0.93730
440.00	22.7273	0.353	5.011	0.169	0.288	0.94795
450.00	22.2222	0.222	4.127	0.115	0.236	0.95235
460.00	21.7391	0.161	3.573	0.087	0.204	0.95465
470.00	21.2766	0.137	3.165	0.070	0.183	0.95195
480.00	20.8333	0.147	2.810	0.060	0.165	0.93650
490.00	20.4082	0.135	2.215	0.043	0.135	0.91350
500.00	20.0000	0.126	1.525	0.029	0.104	0.86060
510.00	19.6078	0.306	0.634	0.026	0.070	0.42610
520.00	19.2308	1.298	0.308	0.017	0.015	0.03485
530.00	18.8679	1.982	0.406	0.025	0.027	0.12630
540.00	18.5185	2.606	0.379	0.035	0.029	0.20910
550.00	18.1818	3.346	0.293	0.054	0.025	0.29685
560.00	17.8571	4.361	0.222	0.093	0.022	0.39645
570.00	17.5439	6.173	1.715	0.222	0.185	0.54815
580.00	17.2414	5.146	5.648	0.332	0.329	0.70615
590.00	16.9492	2.037	5.762	0.344	0.364	0.80905
600.00	16.6667	1.088	4.895	0.230	0.297	0.84725
610.00	16.3934	0.732	4.334	0.172	0.258	0.86645
620.00	16.1290	0.451	3.751	0.122	0.220	0.88915
630.00	15.8730	0.341	3.262	0.094	0.192	0.89115
640.00	15.6250	0.301	2.928	0.079	0.173	0.88365
650.00	15.3846	0.284	2.776	0.073	0.165	0.87930
660.00	15.1515	0.249	2.641	0.065	0.158	0.88395
670.00	14.9254	0.204	2.482	0.057	0.149	0.89345

WN	WL	N	K	IN	DK	R
680.00	14.7059	0.168	2.290	0.048	0.139	0.89900
690.00	14.4928	0.150	2.121	0.043	0.131	0.89765
700.00	14.2857	0.144	2.000	0.040	0.125	0.89205
710.00	14.0845	0.141	1.902	0.037	0.121	0.88630
720.00	13.8889	0.136	1.809	0.035	0.116	0.88150
730.00	13.6986	0.129	1.692	0.032	0.111	0.87650
740.00	13.5135	0.122	1.582	0.029	0.106	0.87095
750.00	13.3333	0.123	1.486	0.028	0.102	0.85890
760.00	13.1579	0.125	1.411	0.027	0.099	0.84810
770.00	12.9870	0.123	1.338	0.025	0.096	0.84040
780.00	12.8205	0.116	1.252	0.023	0.093	0.83645
790.00	12.6582	0.114	1.160	0.022	0.089	0.82505
800.00	12.5000	0.115	1.076	0.021	0.086	0.81000
810.00	12.3457	0.112	1.005	0.020	0.084	0.80230
820.00	12.1951	0.104	0.928	0.018	0.082	0.80245
830.00	12.0482	0.096	0.837	0.016	0.079	0.80135
840.00	11.9048	0.095	0.731	0.015	0.077	0.78400
850.00	11.7647	0.103	0.619	0.014	0.075	0.74740
860.00	11.6279	0.124	0.501	0.013	0.074	0.67935
870.00	11.4943	0.174	0.377	0.012	0.073	0.55615
880.00	11.3636	0.261	0.264	0.011	0.070	0.38860
890.00	11.2360	0.370	0.185	0.012	0.064	0.23840
900.00	11.1111	0.475	0.145	0.013	0.058	0.14225
910.00	10.9890	0.554	0.123	0.013	0.053	0.09210
920.00	10.8696	0.631	0.109	0.013	0.046	0.05765
930.00	10.7527	0.692	0.108	0.013	0.039	0.03840
940.00	10.6383	0.740	0.100	0.013	0.034	0.02640
950.00	10.5263	0.786	0.092	0.012	0.028	0.01745
960.00	10.4167	0.828	0.086	0.012	0.023	0.01140
970.00	10.3093	0.870	0.083	0.011	0.017	0.00700
980.00	10.2041	0.905	0.082	0.010	0.013	0.00445
990.00	10.1010	0.938	0.080	0.009	0.008	0.00280
1000.00	10.0000	0.963	0.082	0.009	0.005	0.00215
1010.00	9.9010	0.988	0.074	0.007	0.002	0.00145
1020.00	9.8039	1.014	0.076	0.006	0.002	0.00150
1030.00	9.7087	1.039	0.070	0.004	0.003	0.00160
1040.00	9.6154	1.064	0.076	0.004	0.004	0.00235
1050.00	9.5238	1.075	0.072	0.004	0.004	0.00255
1060.00	9.4340	1.093	0.064	0.003	0.004	0.00295
1070.00	9.3458	1.113	0.061	0.003	0.004	0.00380
1080.00	9.2593	1.135	0.055	0.003	0.003	0.00475
1090.00	9.1743	1.151	0.058	0.003	0.004	0.00580
1100.00	9.0909	1.168	0.057	0.003	0.004	0.00685
1110.00	9.0090	1.185	0.053	0.003	0.003	0.00790
1120.00	8.9286	1.197	0.052	0.003	0.003	0.00880
1130.00	8.8496	1.213	0.050	0.003	0.003	0.01000
1140.00	8.7719	1.229	0.049	0.003	0.003	0.01130
1150.00	8.6957	1.243	0.052	0.003	0.003	0.01250
1160.00	8.6207	1.249	0.053	0.003	0.003	0.01310
1170.00	8.5470	1.256	0.049	0.003	0.003	0.01365

WN	WL	N	K	DN	DK	R
1180.00	8.4746	1.269	0.042	0.003	0.003	0.01470
1190.00	8.4034	1.287	0.040	0.004	0.003	0.01635
1200.00	8.3333	1.297	0.043	0.004	0.003	0.01745
1210.00	8.2645	1.305	0.044	0.004	0.003	0.01820
1220.00	8.1967	1.312	0.042	0.004	0.003	0.01890
1230.00	8.1301	1.323	0.038	0.004	0.003	0.02000
1240.00	8.0645	1.334	0.038	0.004	0.003	0.02115
1250.00	8.0000	1.342	0.037	0.004	0.002	0.02195
1260.00	7.9365	1.351	0.035	0.004	0.002	0.02290
1270.00	7.8740	1.360	0.034	0.005	0.002	0.02390
1280.00	7.8125	1.370	0.035	0.005	0.002	0.02510
1290.00	7.7519	1.378	0.036	0.005	0.002	0.02600
1300.00	7.6923	1.385	0.035	0.005	0.002	0.02680
1310.00	7.6336	1.392	0.035	0.005	0.002	0.02760
1320.00	7.5758	1.399	0.035	0.005	0.002	0.02835
1330.00	7.5188	1.405	0.036	0.005	0.002	0.02915
1340.00	7.4627	1.412	0.035	0.005	0.002	0.02990
1350.00	7.4074	1.418	0.034	0.005	0.002	0.03065
1360.00	7.3529	1.424	0.033	0.005	0.002	0.03135
1370.00	7.2993	1.430	0.034	0.005	0.002	0.03205
1380.00	7.2464	1.435	0.034	0.006	0.002	0.03270
1390.00	7.1942	1.441	0.034	0.006	0.002	0.03340
1400.00	7.1429	1.446	0.033	0.006	0.002	0.03405
1410.00	7.0922	1.451	0.032	0.006	0.002	0.03465
1420.00	7.0423	1.456	0.032	0.006	0.002	0.03530
1430.00	6.9930	1.461	0.033	0.006	0.002	0.03585
1440.00	6.9444	1.465	0.034	0.006	0.002	0.03645
1450.00	6.8966	1.470	0.033	0.006	0.002	0.03700
1460.00	6.8493	1.474	0.031	0.006	0.002	0.03755
1470.00	6.8027	1.479	0.031	0.006	0.002	0.03810
1480.00	6.7568	1.483	0.031	0.006	0.002	0.03865
1490.00	6.7114	1.487	0.032	0.006	0.002	0.03920
1500.00	6.6667	1.492	0.031	0.006	0.002	0.03975
1510.00	6.6225	1.496	0.030	0.006	0.002	0.04030
1520.00	6.5789	1.500	0.029	0.006	0.002	0.04080
1530.00	6.5359	1.503	0.030	0.007	0.002	0.04125
1540.00	6.4935	1.507	0.031	0.007	0.002	0.04170
1550.00	6.4516	1.510	0.031	0.007	0.002	0.04215
1560.00	6.4103	1.513	0.030	0.007	0.002	0.04255
1570.00	6.3694	1.517	0.029	0.007	0.002	0.04300
1580.00	6.3291	1.520	0.029	0.007	0.002	0.04340
1590.00	6.2893	1.523	0.030	0.007	0.002	0.04385
1600.00	6.2500	1.526	0.031	0.007	0.002	0.04425
1610.00	6.2112	1.529	0.030	0.007	0.002	0.04465
1620.00	6.1728	1.532	0.029	0.007	0.002	0.04505
1630.00	6.1350	1.535	0.028	0.007	0.002	0.04540
1640.00	6.0976	1.538	0.029	0.007	0.002	0.04575
1650.00	6.0606	1.540	0.029	0.007	0.002	0.04615
1660.00	6.0241	1.543	0.029	0.007	0.002	0.04655
1670.00	5.9880	1.546	0.028	0.007	0.002	0.04690

WN	WL	N	K	DN	DK	R
1680.00	5.9524	1.549	0.027	0.007	0.002	0.04725
1690.00	5.9172	1.551	0.028	0.007	0.002	0.04755
1700.00	5.8824	1.554	0.028	0.007	0.002	0.04790
1710.00	5.8480	1.556	0.028	0.007	0.002	0.04825
1720.00	5.8140	1.558	0.027	0.007	0.002	0.04855
1730.00	5.7803	1.561	0.026	0.007	0.002	0.04890
1740.00	5.7471	1.563	0.026	0.007	0.002	0.04920
1750.00	5.7143	1.566	0.027	0.007	0.002	0.04955
1760.00	5.6818	1.568	0.028	0.008	0.002	0.04985
1770.00	5.6497	1.570	0.027	0.008	0.002	0.05015
1780.00	5.6180	1.573	0.026	0.008	0.002	0.05045
1790.00	5.5866	1.575	0.025	0.008	0.002	0.05075
1800.00	5.5556	1.577	0.026	0.008	0.002	0.05105
1810.00	5.5249	1.579	0.027	0.008	0.002	0.05135
1820.00	5.4945	1.581	0.027	0.008	0.002	0.05160
1830.00	5.4645	1.583	0.026	0.008	0.002	0.05190
1840.00	5.4349	1.585	0.025	0.008	0.002	0.05215
1850.00	5.4054	1.587	0.026	0.008	0.002	0.05245
1860.00	5.3763	1.589	0.027	0.008	0.002	0.05270
1870.00	5.3476	1.591	0.027	0.008	0.002	0.05295
1880.00	5.3191	1.593	0.027	0.008	0.002	0.05320
1890.00	5.2910	1.594	0.026	0.008	0.002	0.05340
1900.00	5.2632	1.596	0.027	0.008	0.002	0.05365
1910.00	5.2356	1.597	0.028	0.008	0.002	0.05380
1920.00	5.2083	1.598	0.029	0.008	0.002	0.05400
1930.00	5.1817	1.599	0.028	0.008	0.002	0.05415
1940.00	5.1546	1.601	0.027	0.008	0.002	0.05435
1950.00	5.1282	1.602	0.027	0.008	0.002	0.05450
1960.00	5.1020	1.603	0.027	0.008	0.002	0.05465
1970.00	5.0761	1.604	0.028	0.008	0.002	0.05485
1980.00	5.0505	1.606	0.028	0.008	0.002	0.05505
1990.00	5.0251	1.607	0.027	0.008	0.002	0.05520
2000.00	5.0000	1.608	0.026	0.008	0.002	0.05535
2010.00	4.9751	1.609	0.027	0.008	0.002	0.05545
2020.00	4.9505	1.610	0.027	0.008	0.002	0.05560
2030.00	4.9261	1.611	0.027	0.008	0.002	0.05580
2040.00	4.9020	1.613	0.026	0.008	0.002	0.05595
2050.00	4.8780	1.614	0.025	0.008	0.002	0.05610
2060.00	4.8544	1.615	0.025	0.008	0.002	0.05625
2070.00	4.8309	1.616	0.025	0.008	0.002	0.05645
2080.00	4.8077	1.618	0.026	0.008	0.002	0.05665
2090.00	4.7847	1.619	0.025	0.008	0.002	0.05685
2100.00	4.7619	1.620	0.024	0.008	0.002	0.05700
2110.00	4.7393	1.621	0.024	0.008	0.002	0.05710
2120.00	4.7170	1.622	0.025	0.008	0.002	0.05725
2130.00	4.6948	1.623	0.025	0.008	0.002	0.05735
2140.00	4.6729	1.624	0.025	0.008	0.002	0.05750
2150.00	4.6512	1.625	0.024	0.008	0.002	0.05765
2160.00	4.6296	1.626	0.022	0.008	0.002	0.05780
2170.00	4.6083	1.627	0.023	0.008	0.002	0.05795

WN	WL	N	K	DN	DK	R
2180.00	4.5872	1.628	0.024	0.008	0.002	0.05810
2190.00	4.5662	1.629	0.024	0.008	0.002	0.05825
2200.00	4.5455	1.630	0.023	0.008	0.002	0.05840
2210.00	4.5249	1.631	0.022	0.008	0.002	0.05855
2220.00	4.5045	1.632	0.022	0.009	0.002	0.05870
2230.00	4.4843	1.633	0.023	0.009	0.002	0.05885
2240.00	4.4643	1.634	0.023	0.009	0.002	0.05895
2250.00	4.4444	1.635	0.022	0.009	0.002	0.05910
2260.00	4.4248	1.636	0.021	0.009	0.001	0.05925
2270.00	4.4053	1.637	0.021	0.009	0.001	0.05940
2280.00	4.3860	1.638	0.021	0.009	0.001	0.05955
2290.00	4.3668	1.640	0.022	0.009	0.002	0.05970
2300.00	4.3478	1.641	0.022	0.009	0.002	0.05985
2310.00	4.3290	1.642	0.021	0.009	0.001	0.06000
2320.00	4.3103	1.643	0.021	0.009	0.001	0.06015
2330.00	4.2918	1.643	0.022	0.009	0.002	0.06025
2340.00	4.2735	1.644	0.023	0.009	0.002	0.06035
2350.00	4.2553	1.645	0.023	0.009	0.002	0.06045
2360.00	4.2373	1.646	0.022	0.009	0.002	0.06055
2370.00	4.2194	1.646	0.022	0.009	0.002	0.06060
2380.00	4.2017	1.646	0.022	0.009	0.002	0.06065
2390.00	4.1841	1.647	0.022	0.009	0.002	0.06070
2400.00	4.1667	1.647	0.023	0.009	0.002	0.06080
2410.00	4.1494	1.648	0.021	0.009	0.001	0.06090
2420.00	4.1322	1.649	0.021	0.009	0.001	0.06105
2430.00	4.1152	1.650	0.020	0.009	0.001	0.06115
2440.00	4.0984	1.651	0.021	0.009	0.001	0.06125
2450.00	4.0816	1.651	0.022	0.009	0.002	0.06130
2460.00	4.0650	1.651	0.021	0.009	0.001	0.06135
2470.00	4.0486	1.652	0.020	0.009	0.001	0.06145
2480.00	4.0323	1.653	0.019	0.009	0.001	0.06155
2490.00	4.0161	1.653	0.019	0.009	0.001	0.06165
2500.00	4.0000	1.654	0.020	0.009	0.001	0.06175
2510.00	3.9841	1.655	0.020	0.009	0.001	0.06190
2520.00	3.9683	1.656	0.019	0.009	0.001	0.06200
2530.00	3.9526	1.657	0.018	0.009	0.001	0.06215
2540.00	3.9370	1.658	0.018	0.009	0.001	0.06230
2550.00	3.9216	1.659	0.019	0.009	0.001	0.06245
2560.00	3.9063	1.659	0.020	0.009	0.001	0.06250
2570.00	3.8911	1.660	0.020	0.009	0.001	0.06255
2580.00	3.8760	1.660	0.019	0.009	0.001	0.06260
2590.00	3.8610	1.661	0.019	0.009	0.001	0.06265
2600.00	3.8462	1.661	0.019	0.009	0.001	0.06270
2610.00	3.8314	1.661	0.019	0.009	0.001	0.06275
2620.00	3.8168	1.662	0.019	0.009	0.001	0.06290
2630.00	3.8023	1.663	0.018	0.009	0.001	0.06305
2640.00	3.7879	1.664	0.017	0.009	0.001	0.06315
2650.00	3.7736	1.665	0.018	0.009	0.001	0.06325
2660.00	3.7594	1.665	0.019	0.009	0.001	0.06330
2670.00	3.7453	1.665	0.019	0.009	0.001	0.06335

WN	WL	N	K	DN	DK	R
2680.00	3.7313	1.666	0.018	0.009	0.001	0.06345
2690.00	3.7175	1.667	0.017	0.009	0.001	0.06350
2700.00	3.7037	1.667	0.017	0.009	0.001	0.06360
2710.00	3.6900	1.668	0.018	0.009	0.001	0.06370
2720.00	3.6765	1.669	0.018	0.009	0.001	0.06380
2730.00	3.6630	1.669	0.017	0.009	0.001	0.06390
2740.00	3.6496	1.670	0.017	0.009	0.001	0.06400
2750.00	3.6364	1.670	0.017	0.009	0.001	0.06405
2760.00	3.6232	1.671	0.017	0.009	0.001	0.06415
2770.00	3.6101	1.672	0.018	0.009	0.001	0.06425
2780.00	3.5971	1.673	0.018	0.009	0.001	0.06435
2790.00	3.5842	1.673	0.017	0.009	0.001	0.06440
2800.00	3.5714	1.674	0.017	0.009	0.001	0.06450
2810.00	3.5587	1.674	0.017	0.009	0.001	0.06460
2820.00	3.5461	1.675	0.018	0.009	0.001	0.06465
2830.00	3.5336	1.675	0.018	0.009	0.001	0.06470
2840.00	3.5211	1.676	0.017	0.009	0.001	0.06480
2850.00	3.5068	1.676	0.017	0.009	0.001	0.06490
2860.00	3.4965	1.677	0.017	0.009	0.001	0.06500
2870.00	3.4843	1.677	0.018	0.009	0.001	0.06505
2880.00	3.4722	1.678	0.019	0.009	0.001	0.06510
2890.00	3.4602	1.678	0.019	0.009	0.001	0.06515
2900.00	3.4483	1.678	0.018	0.009	0.001	0.06520
2910.00	3.4364	1.678	0.018	0.009	0.001	0.06520
2920.00	3.4247	1.679	0.018	0.009	0.001	0.06525
2930.00	3.4130	1.680	0.019	0.009	0.001	0.06535
2940.00	3.4014	1.680	0.019	0.009	0.001	0.06545
2950.00	3.3898	1.681	0.018	0.009	0.001	0.06550
2960.00	3.3784	1.681	0.018	0.009	0.001	0.06555
2970.00	3.3670	1.681	0.019	0.009	0.001	0.06560
2980.00	3.3557	1.682	0.019	0.009	0.001	0.06565
2990.00	3.3445	1.682	0.020	0.009	0.001	0.06570
3000.00	3.3333	1.682	0.019	0.009	0.001	0.06575
3010.00	3.3223	1.683	0.019	0.009	0.001	0.06580
3020.00	3.3113	1.683	0.019	0.009	0.001	0.06585
3030.00	3.3003	1.683	0.020	0.009	0.001	0.06585
3040.00	3.2895	1.683	0.021	0.009	0.001	0.06585
3050.00	3.2787	1.683	0.020	0.009	0.001	0.06585
3060.00	3.2680	1.683	0.019	0.009	0.001	0.06585
3070.00	3.2573	1.683	0.019	0.009	0.001	0.06590
3080.00	3.2468	1.684	0.019	0.009	0.001	0.06600
3090.00	3.2362	1.684	0.020	0.009	0.001	0.06605
3100.00	3.2258	1.684	0.020	0.009	0.001	0.06605
3110.00	3.2154	1.684	0.019	0.009	0.001	0.06605
3120.00	3.2051	1.684	0.019	0.009	0.001	0.06605
3130.00	3.1949	1.685	0.019	0.009	0.001	0.06610
3140.00	3.1847	1.685	0.019	0.009	0.001	0.06610
3150.00	3.1746	1.685	0.019	0.009	0.001	0.06615
3160.00	3.1646	1.686	0.019	0.009	0.001	0.06625
3170.00	3.1546	1.686	0.018	0.009	0.001	0.06630

WN	WL	N	K	DN	DK	R
3180.00	3.1447	1.687	0.019	0.009	0.001	0.06635
3190.00	3.1348	1.686	0.019	0.009	0.001	0.06635
3200.00	3.1250	1.686	0.020	0.009	0.001	0.06630
3210.00	3.1153	1.686	0.019	0.009	0.001	0.06630
3220.00	3.1056	1.687	0.018	0.009	0.001	0.06635
3230.00	3.0960	1.687	0.017	0.009	0.001	0.06645
3240.00	3.0864	1.688	0.018	0.009	0.001	0.06650
3250.00	3.0769	1.688	0.019	0.009	0.001	0.06655
3260.00	3.0675	1.688	0.019	0.009	0.001	0.06660
3270.00	3.0581	1.688	0.018	0.009	0.001	0.06660
3280.00	3.0488	1.689	0.017	0.009	0.001	0.06665
3290.00	3.0395	1.689	0.018	0.009	0.001	0.06670
3300.00	3.0303	1.689	0.018	0.009	0.001	0.06675
3310.00	3.0211	1.690	0.019	0.009	0.001	0.06680
3320.00	3.0120	1.690	0.018	0.009	0.001	0.06680
3330.00	3.0030	1.690	0.018	0.009	0.001	0.06680
3340.00	2.9940	1.690	0.018	0.009	0.001	0.06680
3350.00	2.9851	1.690	0.018	0.009	0.001	0.06680
3360.00	2.9762	1.690	0.018	0.009	0.001	0.06685
3370.00	2.9674	1.690	0.017	0.009	0.001	0.06690
3380.00	2.9586	1.691	0.017	0.009	0.001	0.06695
3390.00	2.9499	1.691	0.016	0.009	0.001	0.06700
3400.00	2.9412	1.691	0.017	0.009	0.001	0.06705
3410.00	2.9326	1.692	0.017	0.009	0.001	0.06710
3420.00	2.9240	1.692	0.017	0.010	0.001	0.06715
3430.00	2.9155	1.692	0.016	0.010	0.001	0.06715
3440.00	2.9070	1.693	0.016	0.010	0.001	0.06720
3450.00	2.8986	1.693	0.016	0.010	0.001	0.06725
3460.00	2.8902	1.693	0.017	0.010	0.001	0.06730
3470.00	2.8818	1.694	0.017	0.010	0.001	0.06735
3480.00	2.8736	1.694	0.016	0.010	0.001	0.06735
3490.00	2.8653	1.694	0.016	0.010	0.001	0.06740
3500.00	2.8571	1.694	0.016	0.010	0.001	0.06745
3510.00	2.8490	1.695	0.016	0.010	0.001	0.06750
3520.00	2.8409	1.695	0.017	0.010	0.001	0.06755
3530.00	2.8329	1.695	0.017	0.010	0.001	0.06755
3540.00	2.8249	1.695	0.016	0.010	0.001	0.06755
3550.00	2.8169	1.695	0.016	0.010	0.001	0.06755
3560.00	2.8090	1.695	0.016	0.010	0.001	0.06760
3570.00	2.8011	1.696	0.016	0.010	0.001	0.06765
3580.00	2.7933	1.696	0.016	0.010	0.001	0.06770
3590.00	2.7855	1.697	0.016	0.010	0.001	0.06780
3600.00	2.7778	1.697	0.015	0.010	0.001	0.06785
3610.00	2.7701	1.697	0.016	0.010	0.001	0.06790
3620.00	2.7624	1.697	0.017	0.010	0.001	0.06790
3630.00	2.7548	1.697	0.018	0.010	0.001	0.06790
3640.00	2.7473	1.697	0.017	0.010	0.001	0.06785
3650.00	2.7397	1.697	0.017	0.010	0.001	0.06780
3660.00	2.7322	1.696	0.016	0.010	0.001	0.06775
3670.00	2.7248	1.696	0.016	0.010	0.001	0.06775



WN	WL	N	K	DN	DK	R
3680.00	2.7174	1.697	0.016	0.010	0.001	0.06780
3690.00	2.7100	1.697	0.016	0.010	0.001	0.06790
3700.00	2.7027	1.698	0.015	0.010	0.001	0.06795
3710.00	2.6954	1.698	0.015	0.010	0.001	0.06795
3720.00	2.6882	1.698	0.016	0.010	0.001	0.06795
3730.00	2.6810	1.698	0.016	0.010	0.001	0.06795
3740.00	2.6738	1.698	0.016	0.010	0.001	0.06795
3750.00	2.6667	1.698	0.015	0.010	0.001	0.06795
3760.00	2.6596	1.698	0.014	0.010	0.001	0.06800
3770.00	2.6525	1.698	0.015	0.010	0.001	0.06800
3780.00	2.6455	1.698	0.015	0.010	0.001	0.06800
3790.00	2.6385	1.698	0.015	0.010	0.001	0.06800
3800.00	2.6316	1.699	0.014	0.010	0.001	0.06805
3810.00	2.6247	1.699	0.013	0.010	0.001	0.06810
3820.00	2.6178	1.699	0.013	0.010	0.001	0.06815
3830.00	2.6110	1.700	0.013	0.010	0.001	0.06825
3840.00	2.6042	1.700	0.013	0.010	0.001	0.06830
3850.00	2.5974	1.701	0.012	0.010	0.001	0.06835
3860.00	2.5907	1.701	0.012	0.010	0.001	0.06845
3870.00	2.5840	1.702	0.012	0.010	0.001	0.06850
3880.00	2.5773	1.702	0.012	0.010	0.001	0.06855
3890.00	2.5707	1.703	0.013	0.010	0.001	0.06865
3900.00	2.5641	1.703	0.013	0.010	0.001	0.06870
3910.00	2.5575	1.703	0.012	0.010	0.001	0.06875
3920.00	2.5510	1.704	0.012	0.010	0.001	0.06880
3930.00	2.5445	1.704	0.012	0.010	0.001	0.06885
3940.00	2.5381	1.704	0.013	0.010	0.001	0.06890
3950.00	2.5316	1.705	0.013	0.010	0.001	0.06895
3960.00	2.5253	1.705	0.012	0.010	0.001	0.06900
3970.00	2.5189	1.706	0.012	0.010	0.001	0.06910
3980.00	2.5126	1.706	0.012	0.010	0.001	0.06915
3990.00	2.5063	1.707	0.013	0.010	0.001	0.06920
4000.00	2.5000	1.706	0.014	0.010	0.001	0.06920
4016.06	2.4900	1.707	0.013	0.010	0.001	0.06930
4032.26	2.4800	1.708	0.013	0.010	0.001	0.06935
4048.58	2.4700	1.708	0.014	0.010	0.001	0.06945
4065.04	2.4600	1.709	0.014	0.010	0.001	0.06950
4081.63	2.4500	1.709	0.015	0.010	0.001	0.06950
4098.36	2.4400	1.709	0.016	0.010	0.001	0.06950
4115.23	2.4300	1.709	0.015	0.010	0.001	0.06950
4132.23	2.4200	1.709	0.015	0.010	0.001	0.06955
4149.38	2.4100	1.709	0.016	0.010	0.001	0.06960
4166.67	2.4000	1.709	0.015	0.010	0.001	0.06960
4184.10	2.3900	1.709	0.017	0.010	0.001	0.06960
4201.66	2.3800	1.709	0.016	0.010	0.001	0.06960
4219.41	2.3700	1.709	0.016	0.010	0.001	0.06960
4237.29	2.3600	1.710	0.016	0.010	0.001	0.06965
4255.32	2.3500	1.710	0.016	0.010	0.001	0.06965
4273.50	2.3400	1.710	0.016	0.010	0.001	0.06965
4291.85	2.3300	1.710	0.016	0.010	0.001	0.06965

WN	WL	N	K	DN	DK	R
4310.34	2.3200	1.710	0.016	0.010	0.001	0.06970
4329.00	2.3100	1.710	0.016	0.010	0.001	0.06975
4347.83	2.3000	1.711	0.016	0.010	0.001	0.06980
4366.81	2.2900	1.711	0.016	0.010	0.001	0.06985
4385.96	2.2800	1.711	0.016	0.010	0.001	0.06985
4405.29	2.2700	1.711	0.017	0.010	0.001	0.06985
4424.78	2.2600	1.711	0.016	0.010	0.001	0.06985
4444.44	2.2500	1.711	0.017	0.010	0.001	0.06985
4464.29	2.2400	1.711	0.017	0.010	0.001	0.06985
4484.30	2.2300	1.711	0.017	0.010	0.001	0.06985
4504.50	2.2200	1.711	0.017	0.010	0.001	0.06980
4524.89	2.2100	1.711	0.016	0.010	0.001	0.06985
4545.45	2.2000	1.711	0.016	0.010	0.001	0.06990
4566.21	2.1900	1.712	0.016	0.010	0.001	0.06995
4587.16	2.1800	1.712	0.016	0.010	0.001	0.07000
4608.29	2.1700	1.712	0.016	0.010	0.001	0.07000
4629.63	2.1600	1.712	0.016	0.010	0.001	0.07000
4651.16	2.1500	1.712	0.016	0.010	0.001	0.07000
4672.90	2.1400	1.712	0.015	0.010	0.001	0.07005
4694.84	2.1300	1.713	0.015	0.010	0.001	0.07010
4716.98	2.1200	1.713	0.015	0.010	0.001	0.07015
4739.34	2.1100	1.713	0.016	0.010	0.001	0.07020
4761.90	2.1000	1.714	0.016	0.010	0.001	0.07025
4784.69	2.0900	1.714	0.015	0.010	0.001	0.07030
4807.69	2.0800	1.714	0.015	0.010	0.001	0.07035
4830.92	2.0700	1.714	0.015	0.010	0.001	0.07035
4854.37	2.0600	1.714	0.015	0.010	0.001	0.07035
4878.05	2.0500	1.714	0.015	0.010	0.001	0.07035
4901.96	2.0400	1.714	0.015	0.010	0.001	0.07035
4926.11	2.0300	1.715	0.015	0.010	0.001	0.07040
4950.50	2.0200	1.715	0.015	0.010	0.001	0.07045
4975.12	2.0100	1.715	0.015	0.010	0.001	0.07050
5000.00	2.0000	1.716	0.015	0.010	0.001	0.07055
5025.13	1.9900	1.716	0.015	0.010	0.001	0.07060
5050.51	1.9800	1.717	0.015	0.010	0.001	0.07070
5076.14	1.9700	1.717	0.015	0.010	0.001	0.07075
5102.04	1.9600	1.718	0.015	0.010	0.001	0.07080
5128.21	1.9500	1.718	0.016	0.010	0.001	0.07080
5154.64	1.9400	1.718	0.016	0.010	0.001	0.07080
5181.35	1.9300	1.717	0.017	0.010	0.001	0.07080
5208.33	1.9200	1.718	0.017	0.010	0.001	0.07080
5235.60	1.9100	1.718	0.016	0.010	0.001	0.07085
5263.16	1.9000	1.718	0.017	0.010	0.001	0.07085
5291.01	1.8900	1.717	0.018	0.010	0.001	0.07080
5319.15	1.8800	1.717	0.018	0.010	0.001	0.07070
5347.59	1.8700	1.716	0.016	0.010	0.001	0.07060
5376.34	1.8600	1.716	0.016	0.010	0.001	0.07060
5405.41	1.8500	1.717	0.015	0.010	0.001	0.07070
5434.78	1.8400	1.718	0.015	0.010	0.001	0.07080
5464.48	1.8300	1.718	0.015	0.010	0.001	0.07090

WN	WL	N	K	DN	DK	R
5494.51	1.8200	1.718	0.015	0.010	0.001	0.07090
5524.86	1.8100	1.719	0.015	0.010	0.001	0.07095
5555.56	1.8000	1.719	0.015	0.010	0.001	0.07105
5586.59	1.7900	1.720	0.015	0.010	0.001	0.07115
5617.98	1.7800	1.720	0.015	0.010	0.001	0.07120
5649.72	1.7700	1.720	0.017	0.010	0.001	0.07120
5681.82	1.7600	1.720	0.016	0.010	0.001	0.07115
5714.29	1.7500	1.720	0.016	0.010	0.001	0.07115
5747.13	1.7400	1.720	0.017	0.010	0.001	0.07115
5780.35	1.7300	1.720	0.016	0.010	0.001	0.07120
5813.95	1.7200	1.721	0.016	0.010	0.001	0.07125
5847.95	1.7100	1.721	0.017	0.010	0.001	0.07125
5882.35	1.7000	1.721	0.017	0.010	0.001	0.07125
5917.16	1.6900	1.721	0.017	0.010	0.001	0.07125
5952.38	1.6800	1.721	0.016	0.010	0.001	0.07125
5988.02	1.6700	1.721	0.016	0.010	0.001	0.07125
6024.10	1.6600	1.721	0.016	0.010	0.001	0.07125
6060.61	1.6500	1.721	0.016	0.010	0.001	0.07125
6097.56	1.6400	1.721	0.016	0.010	0.001	0.07130
6134.97	1.6300	1.721	0.015	0.010	0.001	0.07130
6172.84	1.6200	1.721	0.016	0.010	0.001	0.07135
6211.18	1.6100	1.722	0.016	0.010	0.001	0.07140
6250.00	1.6000	1.722	0.016	0.010	0.001	0.07140
6289.31	1.5900	1.722	0.016	0.010	0.001	0.07140
6329.11	1.5800	1.722	0.016	0.010	0.001	0.07145
6369.43	1.5700	1.723	0.015	0.010	0.001	0.07155
6410.26	1.5600	1.723	0.016	0.010	0.001	0.07160
6451.61	1.5500	1.723	0.016	0.010	0.001	0.07165
6493.51	1.5400	1.723	0.016	0.010	0.001	0.07160
6535.95	1.5300	1.723	0.017	0.010	0.001	0.07160
6578.55	1.5200	1.723	0.016	0.010	0.001	0.07165
6622.52	1.5100	1.724	0.016	0.010	0.001	0.07170
6666.67	1.5000	1.724	0.016	0.010	0.001	0.07175
6711.41	1.4900	1.724	0.017	0.010	0.001	0.07175
6756.76	1.4800	1.724	0.017	0.010	0.001	0.07180
6802.72	1.4700	1.724	0.017	0.010	0.001	0.07180
6849.32	1.4600	1.725	0.017	0.010	0.001	0.07185
6896.55	1.4500	1.725	0.017	0.010	0.001	0.07185
6944.44	1.4400	1.724	0.018	0.010	0.001	0.07180
6993.01	1.4300	1.724	0.018	0.010	0.001	0.07180
7042.25	1.4200	1.725	0.018	0.010	0.001	0.07185
7092.20	1.4100	1.725	0.018	0.010	0.001	0.07185
7142.86	1.4000	1.724	0.018	0.010	0.001	0.07180
7194.24	1.3900	1.724	0.018	0.010	0.001	0.07180
7246.38	1.3800	1.724	0.018	0.010	0.001	0.07180
7299.27	1.3700	1.724	0.018	0.010	0.001	0.07180
7352.94	1.3600	1.724	0.018	0.010	0.001	0.07180
7407.41	1.3500	1.724	0.018	0.010	0.001	0.07180
7462.69	1.3400	1.724	0.018	0.010	0.001	0.07180
7518.80	1.3300	1.724	0.018	0.010	0.001	0.07180

WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.725	0.017	0.010	0.001	0.07185
7633.59	1.3100	1.725	0.017	0.010	0.001	0.07190
7692.31	1.3000	1.725	0.018	0.010	0.001	0.07193
7751.94	1.2900	1.725	0.018	0.010	0.001	0.07195
7812.50	1.2800	1.726	0.018	0.010	0.001	0.07200
7874.02	1.2700	1.726	0.018	0.010	0.001	0.07205
7936.51	1.2600	1.726	0.018	0.010	0.001	0.07205
8000.00	1.2500	1.726	0.019	0.010	0.001	0.07205
8064.52	1.2400	1.726	0.019	0.010	0.001	0.07205
8130.08	1.2300	1.726	0.019	0.010	0.001	0.07205
8196.72	1.2200	1.726	0.019	0.010	0.001	0.07200
8264.46	1.2100	1.726	0.019	0.010	0.001	0.07200
8333.33	1.2000	1.725	0.020	0.010	0.001	0.07195
8403.36	1.1900	1.725	0.019	0.010	0.001	0.07195
8474.58	1.1800	1.725	0.019	0.010	0.001	0.07195
8547.01	1.1700	1.725	0.019	0.010	0.001	0.07195
8620.69	1.1600	1.725	0.018	0.010	0.001	0.07195
8695.65	1.1500	1.726	0.018	0.010	0.001	0.07200
8771.93	1.1400	1.726	0.019	0.010	0.001	0.07200
8849.56	1.1300	1.726	0.019	0.010	0.001	0.07200
8928.57	1.1200	1.726	0.019	0.010	0.001	0.07200
9009.01	1.1100	1.726	0.019	0.010	0.001	0.07200
9090.91	1.1000	1.726	0.019	0.010	0.001	0.07200
9174.31	1.0900	1.726	0.019	0.010	0.001	0.07200
9259.26	1.0800	1.726	0.019	0.010	0.001	0.07200
9345.79	1.0700	1.726	0.018	0.010	0.001	0.07200
9433.96	1.0600	1.726	0.019	0.010	0.001	0.07205
9523.81	1.0500	1.726	0.019	0.010	0.001	0.07205
9615.38	1.0400	1.726	0.019	0.010	0.001	0.07205
9708.74	1.0300	1.726	0.019	0.010	0.001	0.07205
9803.92	1.0200	1.726	0.019	0.010	0.001	0.07205
9900.99	1.0100	1.726	0.019	0.010	0.001	0.07205
10000.00	1.0000	1.726	0.019	0.010	0.001	0.07205
10101.01	0.9900	1.726	0.019	0.010	0.001	0.07205
10204.08	0.9800	1.726	0.019	0.010	0.001	0.07205
10309.28	0.9700	1.726	0.019	0.010	0.001	0.07205
10416.67	0.9600	1.726	0.019	0.010	0.001	0.07205
10526.32	0.9500	1.726	0.019	0.010	0.001	0.07205
10638.30	0.9400	1.726	0.019	0.010	0.001	0.07205
10752.69	0.9300	1.726	0.019	0.010	0.001	0.07205
10869.57	0.9200	1.726	0.019	0.010	0.001	0.07205
10989.01	0.9100	1.726	0.019	0.010	0.001	0.07205
11111.11	0.9000	1.726	0.019	0.010	0.001	0.07205
11235.96	0.8900	1.726	0.019	0.010	0.001	0.07210
11363.64	0.8800	1.726	0.019	0.010	0.001	0.07210
11494.25	0.8700	1.726	0.019	0.010	0.001	0.07210
11627.91	0.8600	1.726	0.019	0.010	0.001	0.07210
11764.71	0.8500	1.726	0.019	0.010	0.001	0.07210
11904.76	0.8400	1.726	0.019	0.010	0.001	0.07210
12048.19	0.8300	1.726	0.020	0.010	0.001	0.07210

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.726	0.019	0.010	0.001	0.07210
12345.68	0.8100	1.726	0.019	0.010	0.001	0.07210
12500.00	0.8000	1.727	0.019	0.010	0.001	0.07215
12658.23	0.7900	1.727	0.019	0.010	0.001	0.07215
12820.51	0.7800	1.727	0.019	0.010	0.001	0.07215
12987.01	0.7700	1.727	0.020	0.010	0.001	0.07215
13157.89	0.7600	1.727	0.020	0.010	0.001	0.07215
13333.33	0.7500	1.727	0.020	0.010	0.001	0.07215
13513.51	0.7400	1.727	0.020	0.010	0.001	0.07215
13698.63	0.7300	1.727	0.020	0.010	0.001	0.07215
13888.89	0.7200	1.727	0.019	0.010	0.001	0.07220
14084.51	0.7100	1.727	0.020	0.010	0.001	0.07220
14285.71	0.7000	1.727	0.020	0.010	0.001	0.07220
14492.75	0.6900	1.727	0.020	0.010	0.001	0.07220
14705.88	0.6800	1.727	0.020	0.010	0.001	0.07220
14925.37	0.6700	1.727	0.020	0.010	0.001	0.07220
15151.52	0.6600	1.727	0.020	0.010	0.001	0.07225
15384.62	0.6500	1.727	0.020	0.010	0.001	0.07225
15625.00	0.6400	1.727	0.019	0.010	0.001	0.07225
15873.02	0.6300	1.728	0.020	0.010	0.001	0.07230
16129.03	0.6200	1.728	0.020	0.010	0.001	0.07230
16393.44	0.6100	1.728	0.020	0.010	0.001	0.07230
16666.67	0.6000	1.728	0.020	0.010	0.001	0.07235
16949.15	0.5900	1.728	0.020	0.010	0.001	0.07235
17241.38	0.5800	1.728	0.020	0.010	0.001	0.07240
17543.86	0.5700	1.728	0.020	0.010	0.001	0.07240
17857.14	0.5600	1.728	0.020	0.010	0.001	0.07240
18181.82	0.5500	1.729	0.020	0.010	0.001	0.07245
18518.52	0.5400	1.729	0.020	0.010	0.001	0.07245
18867.92	0.5300	1.729	0.020	0.010	0.001	0.07245
19230.77	0.5200	1.729	0.020	0.010	0.001	0.07250
19607.84	0.5100	1.729	0.021	0.010	0.001	0.07250
20000.00	0.5000	1.729	0.020	0.010	0.001	0.07255
20408.16	0.4900	1.729	0.021	0.010	0.001	0.07255
20833.33	0.4800	1.729	0.020	0.010	0.001	0.07255
21276.60	0.4700	1.730	0.020	0.010	0.001	0.07260
21739.13	0.4600	1.730	0.020	0.010	0.001	0.07260
22222.22	0.4500	1.730	0.020	0.010	0.001	0.07260
22727.27	0.4400	1.730	0.020	0.010	0.001	0.07265
23255.81	0.4300	1.730	0.020	0.010	0.001	0.07265
23809.52	0.4200	1.730	0.019	0.010	0.001	0.07265
24390.24	0.4100	1.731	0.019	0.010	0.001	0.07275
25000.00	0.4000	1.732	0.018	0.010	0.001	0.07290
25641.03	0.3900	1.733	0.018	0.010	0.001	0.07300
26315.79	0.3800	1.733	0.018	0.010	0.001	0.07305
27027.03	0.3700	1.733	0.018	0.010	0.001	0.07305
27777.78	0.3600	1.733	0.017	0.010	0.001	0.07305
28571.43	0.3500	1.734	0.015	0.010	0.001	0.07320
29411.76	0.3400	1.736	0.014	0.010	0.001	0.07340
30303.03	0.3300	1.737	0.013	0.010	0.001	0.07360

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.738	0.012	0.010	0.001	0.07370
32258.06	0.3100	1.738	0.010	0.010	0.001	0.07380
33333.33	0.3000	1.738	0.008	0.010	0.001	0.07380
34482.74	0.2900	1.743	0.002	0.010	0.000	0.07440
35714.29	0.2800	1.748	0.000	0.010	0.000	0.07515
37037.04	0.2700	1.751	-0.003	0.011	0.000	0.07565
38461.54	0.2600	1.755	-0.008	0.011	0.001	0.07615
40000.00	0.2500	1.763	-0.014	0.011	0.001	0.07745
41666.67	0.2400	1.768	-0.017	0.011	0.001	0.07810
43478.26	0.2300	1.780	-0.024	0.011	0.002	0.07990
45454.55	0.2200	1.790	-0.035	0.011	0.003	0.08155
47619.05	0.2100	1.804	-0.048	0.012	0.003	0.08370

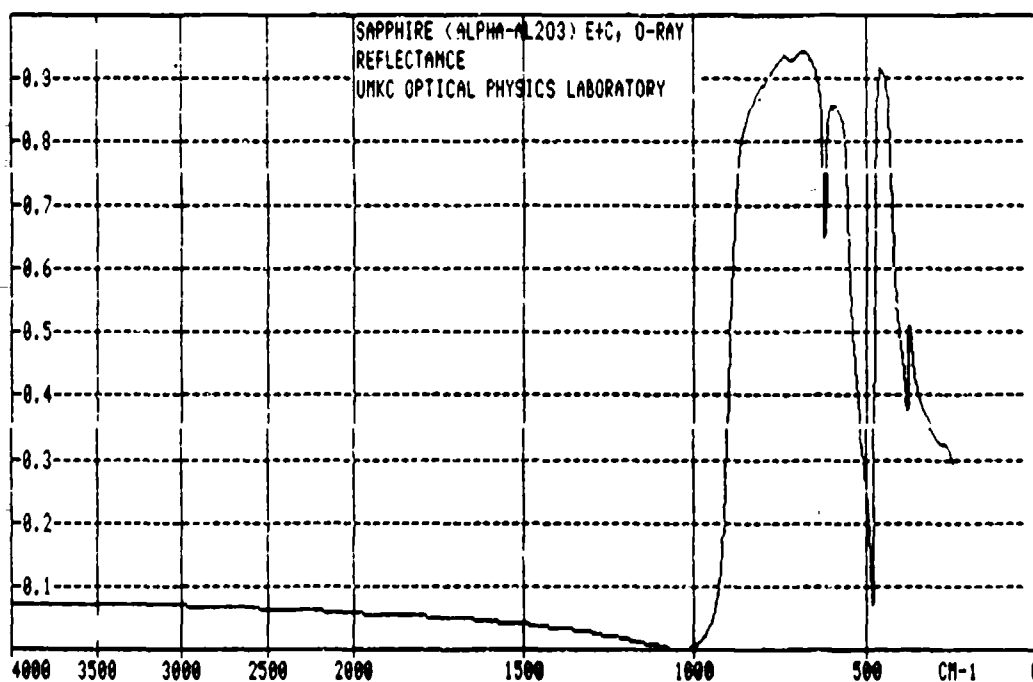


Figure 6. The infrared (4,000-180  $\text{cm}^{-1}$ ) reflectance spectrum of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) for E+C.

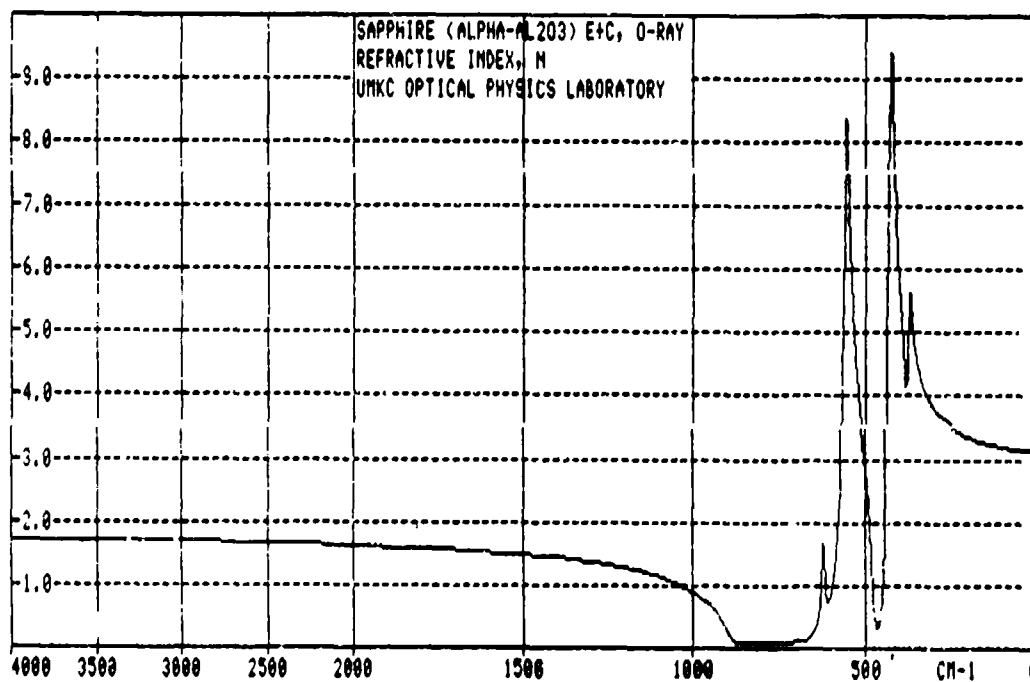


Figure 7. The infrared (4,000-180  $\text{cm}^{-1}$ ) refractive index  $n$  of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) for E+C.

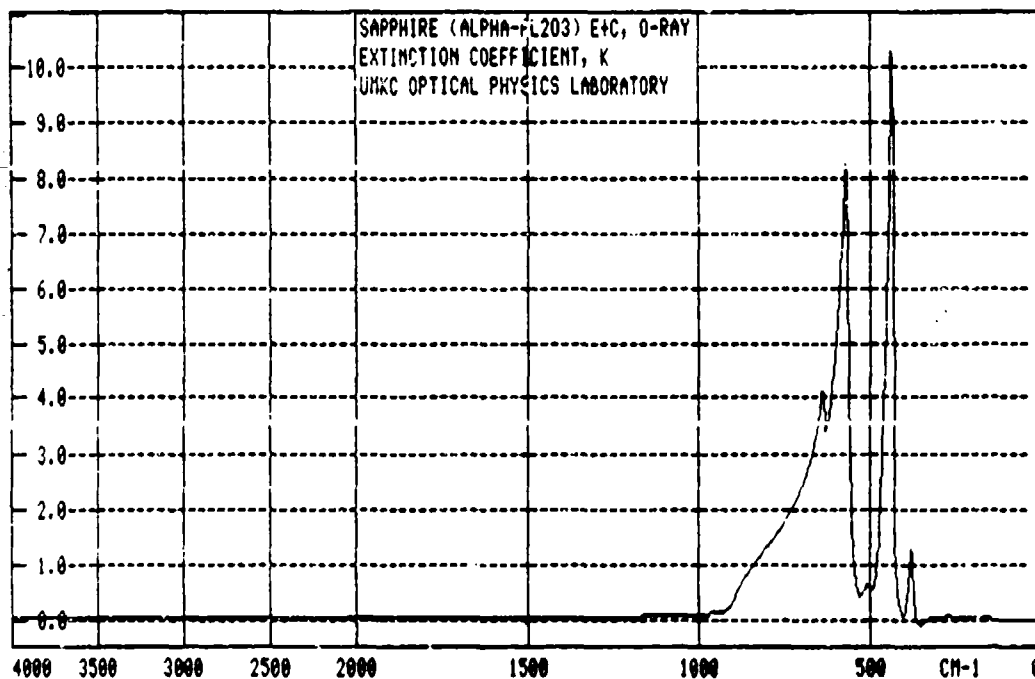


Figure 8. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) extinction coefficient  $k$  of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) for E+C.

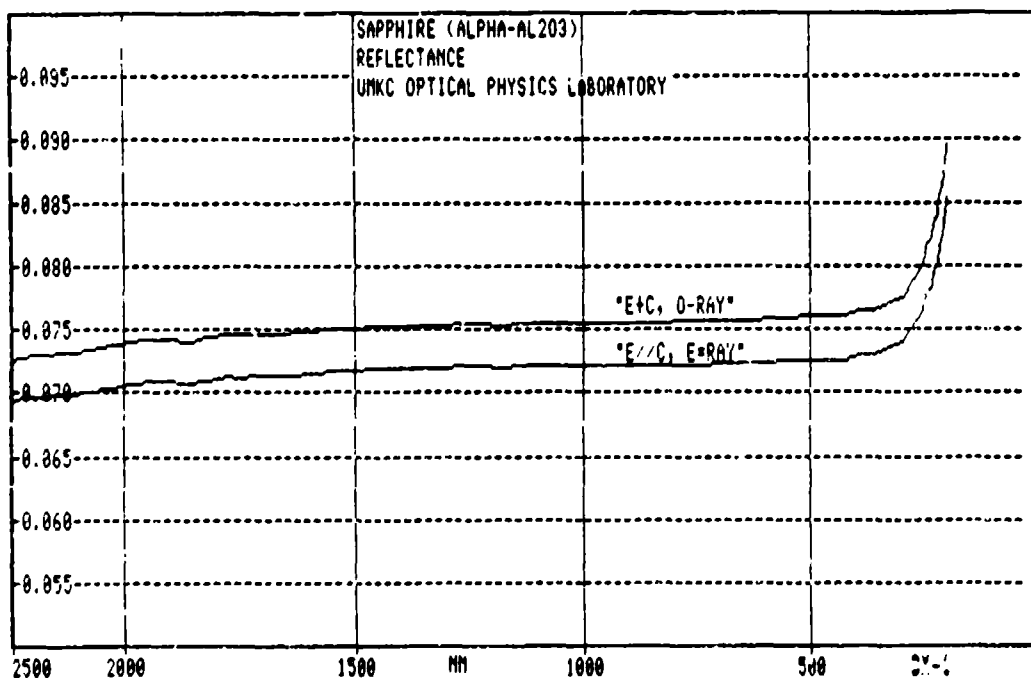


Figure 9. The uv-vis-nir ( $2,500\text{--}200\text{ nm}$ ) reflectance spectrum of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) used for E+C.



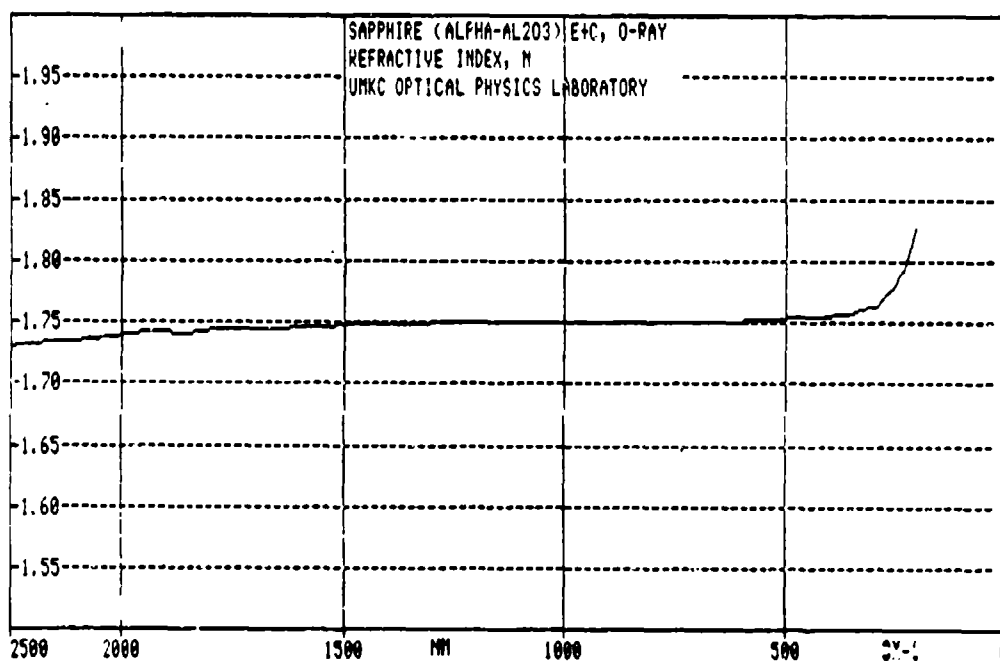


Figure 10. The uv-vis-nir (2,500-210 nm) refractive index  $n$  of sapphire ( $\alpha$ - $\text{Al}_2\text{O}_3$ ) for E+C.

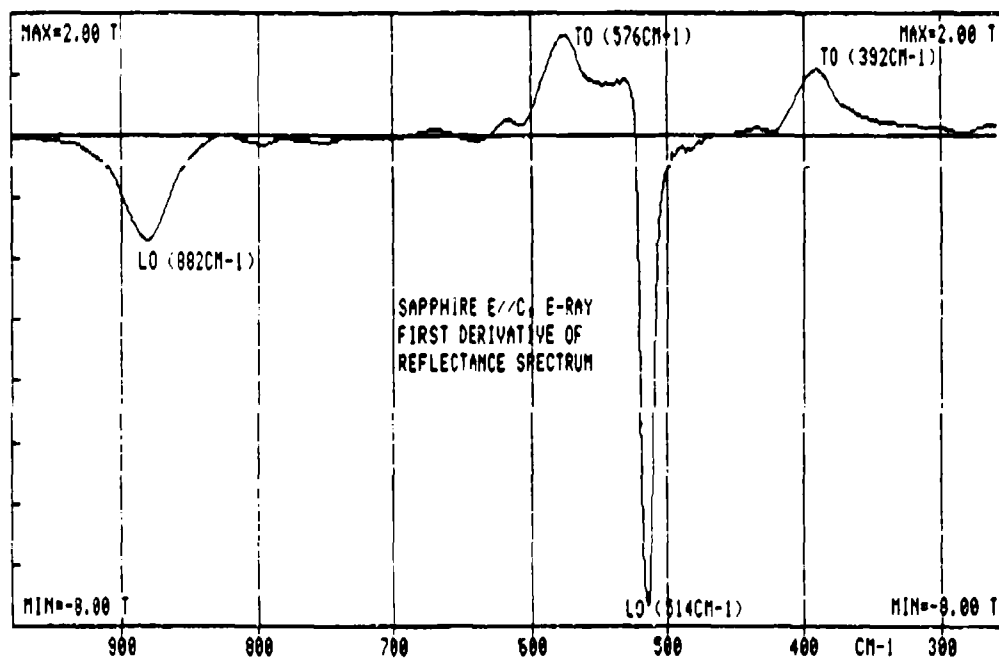


Figure 11. The first derivative of the infrared reflectance spectrum of sapphire ( $\alpha$ - $\text{Al}_2\text{O}_3$ ) for E//C.

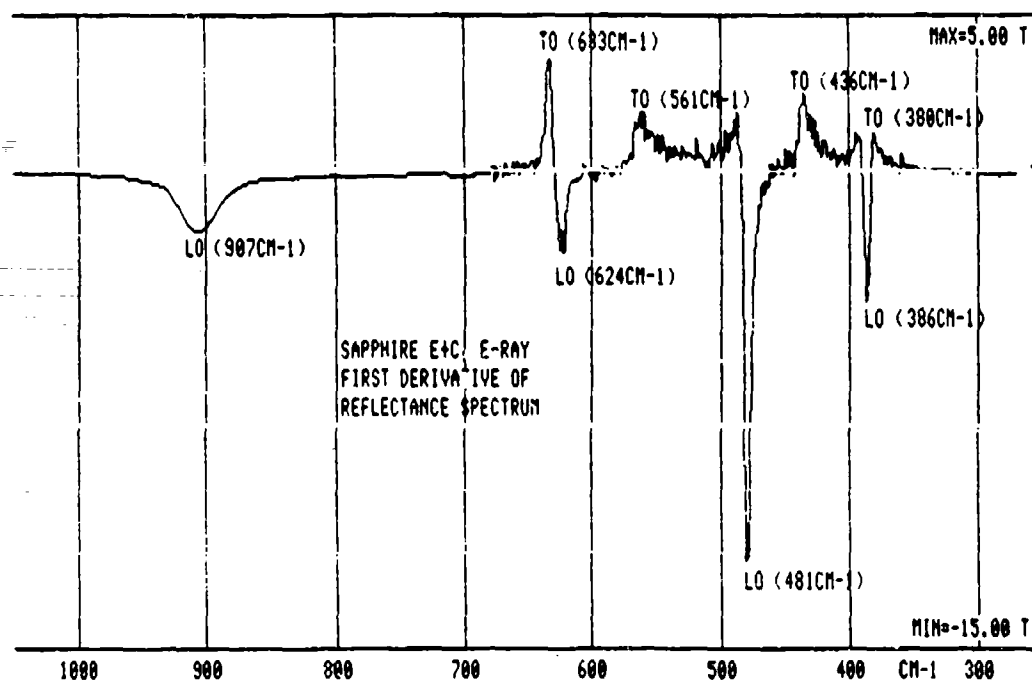


Figure 12. The first derivative of the infrared reflectance spectrum of sapphire ( $\alpha\text{-Al}_2\text{O}_3$ ) for E+C.

WN	WL	N	K	DN	DK	R
180.00	55.5556	3.326	0.011	0.051	0.001	0.29135
190.00	52.6316	3.348	0.009	0.052	0.001	0.29387
200.00	50.0000	3.372	0.018	0.053	0.002	0.29659
210.00	47.6190	3.398	0.028	0.054	0.002	0.29956
220.00	45.4545	3.426	0.028	0.055	0.002	0.30278
230.00	43.4783	3.458	0.021	0.056	0.002	0.30629
240.00	41.6667	3.492	0.013	0.057	0.001	0.31009
250.00	40.0000	3.530	0.028	0.058	0.002	0.31424
260.00	38.4615	3.571	0.048	0.060	0.004	0.31877
270.00	37.0370	3.617	0.067	0.062	0.006	0.32374
280.00	35.7143	3.646	0.077	0.063	0.007	0.32685
290.00	34.4828	3.667	0.031	0.063	0.003	0.32890
300.00	33.3333	3.723	0.013	0.066	0.001	0.33475
310.00	32.2581	3.803	0.019	0.069	0.002	0.34290
320.00	31.2500	3.893	0.046	0.072	0.004	0.35200
330.00	30.3030	4.000	0.010	0.076	0.001	0.36230
340.00	29.4118	4.122	-0.043	0.082	0.004	0.37390
350.00	28.5714	4.279	-0.089	0.088	0.009	0.38835
360.00	27.7778	4.560	-0.069	0.101	0.007	0.41240
370.00	27.0270	4.903	0.108	0.118	0.011	0.43965
380.00	26.3158	5.677	1.312	0.182	0.138	0.51180
390.00	25.6410	3.879	0.606	0.080	0.054	0.36040
400.00	25.0000	5.020	0.066	0.123	0.007	0.44825
410.00	24.3902	5.718	0.108	0.162	0.012	0.49555
420.00	23.6095	6.881	0.312	0.237	0.038	0.55965
430.00	23.2558	9.484	1.231	0.462	0.182	0.66130
440.00	22.7273	7.250	11.173	0.915	1.071	0.85055
450.00	22.2222	1.472	7.373	0.421	0.477	0.90325
460.00	21.7391	0.512	4.730	0.171	0.277	0.91750
470.00	21.2766	0.283	2.824	0.074	0.168	0.88310
480.00	20.8333	0.629	1.220	0.060	0.076	0.39590
490.00	20.4082	1.951	0.573	0.033	0.034	0.13810
500.00	20.0000	2.725	0.591	0.046	0.044	0.23585
510.00	19.6078	3.232	0.662	0.061	0.054	0.29770
520.00	19.2308	3.797	0.480	0.074	0.043	0.34880
530.00	18.8679	4.497	0.420	0.101	0.041	0.41050
540.00	18.5185	5.308	0.642	0.145	0.068	0.47415
550.00	18.1818	6.585	1.299	0.234	0.151	0.55730
560.00	17.8571	8.559	3.839	0.447	0.469	0.67905
570.00	17.5439	5.146	8.491	0.637	0.659	0.81375
580.00	17.2414	2.382	6.996	0.451	0.470	0.84315
590.00	16.9492	1.523	5.835	0.317	0.367	0.85020
600.00	16.6667	1.062	4.919	0.229	0.299	0.85155
610.00	16.3934	0.774	4.260	0.173	0.254	0.85550
620.00	16.1290	0.735	3.626	0.143	0.215	0.81905
630.00	15.8730	1.672	3.460	0.195	0.185	0.65195
640.00	15.6250	0.664	4.250	0.163	0.252	0.87340
650.00	15.3846	0.369	3.683	0.111	0.215	0.90515
660.00	15.1515	0.243	3.326	0.086	0.193	0.92345
670.00	14.9254	0.172	3.049	0.070	0.178	0.93605

WN	WL	N	K	DN	DK	R
680.00	14.7059	0.135	2.838	0.060	0.166	0.94255
690.00	14.4928	0.117	2.645	0.053	0.156	0.94350
700.00	14.2857	0.114	2.466	0.048	0.147	0.93830
710.00	14.0845	0.114	2.311	0.044	0.140	0.93150
720.00	13.8889	0.105	2.178	0.040	0.133	0.93000
730.00	13.6986	0.091	2.064	0.036	0.128	0.93340
740.00	13.5135	0.080	1.948	0.032	0.122	0.93585
750.00	13.3333	0.079	1.833	0.030	0.117	0.93070
760.00	13.1579	0.079	1.721	0.028	0.112	0.92370
770.00	12.9870	0.080	1.618	0.026	0.107	0.91630
780.00	12.8205	0.081	1.524	0.025	0.103	0.90815
790.00	12.6582	0.083	1.439	0.023	0.100	0.89815
800.00	12.5000	0.082	1.356	0.022	0.097	0.89145
810.00	12.3457	0.079	1.266	0.020	0.093	0.88625
820.00	12.1951	0.078	1.176	0.019	0.090	0.87885
830.00	12.0482	0.078	1.088	0.018	0.087	0.86795
840.00	11.9048	0.079	1.002	0.017	0.084	0.85520
850.00	11.7647	0.081	0.915	0.016	0.082	0.83985
860.00	11.6279	0.083	0.822	0.015	0.079	0.82255
870.00	11.4943	0.087	0.719	0.014	0.077	0.79855
880.00	11.3636	0.098	0.608	0.013	0.075	0.75645
890.00	11.2360	0.124	0.484	0.013	0.074	0.67750
900.00	11.1111	0.182	0.355	0.012	0.073	0.53685
910.00	10.9890	0.279	0.239	0.011	0.069	0.35930
920.00	10.8696	0.401	0.166	0.012	0.063	0.20490
930.00	10.7527	0.514	0.139	0.013	0.055	0.11590
940.00	10.6383	0.592	0.130	0.014	0.049	0.07495
950.00	10.5263	0.658	0.120	0.014	0.043	0.04940
960.00	10.4167	0.717	0.112	0.014	0.036	0.03255
970.00	10.3093	0.768	0.108	0.014	0.030	0.02160
980.00	10.2041	0.813	0.103	0.013	0.025	0.01430
990.00	10.1010	0.854	0.097	0.012	0.019	0.00915
1000.00	10.0000	0.890	0.094	0.012	0.014	0.00600
1010.00	9.9010	0.927	0.088	0.010	0.010	0.00360
1020.00	9.8039	0.961	0.089	0.009	0.005	0.00250
1030.00	9.7087	0.990	0.088	0.008	0.002	0.00205
1040.00	9.6154	1.014	0.091	0.007	0.002	0.00215
1050.00	9.5238	1.032	0.089	0.006	0.003	0.00220
1060.00	9.4340	1.050	0.074	0.004	0.003	0.00195
1070.00	9.3458	1.079	0.064	0.003	0.003	0.00245
1080.00	9.2593	1.113	0.063	0.003	0.004	0.00380
1090.00	9.1743	1.136	0.073	0.003	0.004	0.00535
1100.00	9.0909	1.149	0.080	0.004	0.005	0.00635
1110.00	9.0090	1.160	0.074	0.004	0.004	0.00680
1120.00	8.9286	1.173	0.063	0.003	0.004	0.00735
1130.00	8.8496	1.197	0.061	0.003	0.004	0.00900
1140.00	8.7719	1.218	0.062	0.003	0.004	0.01065
1150.00	8.6957	1.228	0.067	0.004	0.004	0.01160
1160.00	8.6207	1.236	0.068	0.004	0.004	0.01235
1170.00	8.5470	1.243	0.058	0.004	0.004	0.01265

WN	WL	N	K	DN	DK	R
1180.00	8.4746	1.265	0.054	0.004	0.004	0.01455
1190.00	8.4034	1.276	0.053	0.004	0.003	0.01555
1200.00	8.3333	1.294	0.055	0.004	0.004	0.01730
1210.00	8.2645	1.301	0.057	0.004	0.004	0.01805
1220.00	8.1967	1.311	0.053	0.004	0.003	0.01900
1230.00	8.1301	1.321	0.054	0.004	0.004	0.02000
1240.00	8.0645	1.336	0.051	0.004	0.003	0.02155
1250.00	8.0000	1.345	0.056	0.005	0.004	0.02260
1260.00	7.9365	1.345	0.055	0.005	0.004	0.02260
1270.00	7.8740	1.359	0.044	0.005	0.003	0.02400
1280.00	7.8125	1.371	0.045	0.005	0.003	0.02530
1290.00	7.7519	1.380	0.047	0.005	0.003	0.02640
1300.00	7.6923	1.388	0.048	0.005	0.003	0.02725
1310.00	7.6336	1.395	0.048	0.005	0.003	0.02810
1320.00	7.5758	1.402	0.048	0.005	0.003	0.02895
1330.00	7.5188	1.409	0.047	0.005	0.003	0.02975
1340.00	7.4627	1.416	0.047	0.005	0.003	0.03055
1350.00	7.4074	1.422	0.047	0.006	0.003	0.03130
1360.00	7.3529	1.428	0.047	0.006	0.003	0.03205
1370.00	7.2993	1.435	0.046	0.006	0.003	0.03280
1380.00	7.2464	1.441	0.045	0.006	0.003	0.03355
1390.00	7.1942	1.447	0.044	0.006	0.003	0.03425
1400.00	7.1429	1.452	0.045	0.006	0.003	0.03490
1410.00	7.0922	1.457	0.045	0.006	0.003	0.03555
1420.00	7.0423	1.462	0.044	0.006	0.003	0.03615
1430.00	6.9930	1.467	0.042	0.006	0.003	0.03680
1440.00	6.9444	1.473	0.041	0.006	0.003	0.03745
1450.00	6.8966	1.478	0.041	0.006	0.003	0.03810
1460.00	6.8493	1.482	0.041	0.006	0.003	0.03870
1470.00	6.8027	1.487	0.041	0.006	0.003	0.03930
1480.00	6.7568	1.492	0.040	0.006	0.003	0.03990
1490.00	6.7114	1.497	0.039	0.006	0.003	0.04050
1500.00	6.6667	1.501	0.039	0.007	0.003	0.04105
1510.00	6.6225	1.505	0.039	0.007	0.003	0.04160
1520.00	6.5789	1.509	0.039	0.007	0.003	0.04210
1530.00	6.5359	1.513	0.039	0.007	0.003	0.04260
1540.00	6.4935	1.517	0.038	0.007	0.003	0.04310
1550.00	6.4516	1.521	0.037	0.007	0.003	0.04360
1560.00	6.4103	1.524	0.037	0.007	0.003	0.04410
1570.00	6.3694	1.528	0.038	0.007	0.003	0.04455
1580.00	6.3291	1.532	0.037	0.007	0.003	0.04505
1590.00	6.2893	1.535	0.036	0.007	0.002	0.04550
1600.00	6.2500	1.538	0.035	0.007	0.002	0.04590
1610.00	6.2112	1.542	0.036	0.007	0.002	0.04635
1620.00	6.1728	1.544	0.036	0.007	0.002	0.04675
1630.00	6.1350	1.548	0.036	0.007	0.002	0.04720
1640.00	6.0976	1.551	0.035	0.007	0.002	0.04760
1650.00	6.0606	1.554	0.034	0.007	0.002	0.04800
1660.00	6.0241	1.557	0.034	0.007	0.002	0.04840
1670.00	5.9880	1.560	0.034	0.007	0.002	0.04880

WN	WL	N	K	DN	DK	R
1680.00	5.9524	1.562	0.034	0.007	0.002	0.04915
1690.00	5.9172	1.565	0.033	0.007	0.002	0.04955
1700.00	5.8824	1.568	0.032	0.008	0.002	0.04990
1710.00	5.8480	1.571	0.032	0.008	0.002	0.05025
1720.00	5.8140	1.573	0.032	0.008	0.002	0.05060
1730.00	5.7803	1.576	0.032	0.008	0.002	0.05100
1740.00	5.7471	1.579	0.031	0.008	0.002	0.05140
1750.00	5.7143	1.582	0.031	0.008	0.002	0.05175
1760.00	5.6818	1.584	0.030	0.008	0.002	0.05210
1770.00	5.6497	1.587	0.031	0.008	0.002	0.05245
1780.00	5.6180	1.589	0.032	0.008	0.002	0.05275
1790.00	5.5866	1.591	0.032	0.008	0.002	0.05305
1800.00	5.5556	1.593	0.031	0.008	0.002	0.05335
1810.00	5.5249	1.596	0.030	0.008	0.002	0.05365
1820.00	5.4945	1.598	0.030	0.008	0.002	0.05395
1830.00	5.4645	1.600	0.031	0.008	0.002	0.05425
1840.00	5.4348	1.602	0.031	0.008	0.002	0.05455
1850.00	5.4054	1.604	0.031	0.008	0.002	0.05480
1860.00	5.3763	1.606	0.030	0.008	0.002	0.05510
1870.00	5.3476	1.608	0.030	0.008	0.002	0.05535
1880.00	5.3191	1.610	0.030	0.008	0.002	0.05565
1890.00	5.2910	1.612	0.031	0.008	0.002	0.05590
1900.00	5.2632	1.614	0.031	0.008	0.002	0.05620
1910.00	5.2356	1.616	0.031	0.008	0.002	0.05645
1920.00	5.2083	1.617	0.030	0.008	0.002	0.05665
1930.00	5.1813	1.619	0.031	0.008	0.002	0.05685
1940.00	5.1546	1.620	0.032	0.008	0.002	0.05710
1950.00	5.1282	1.621	0.032	0.008	0.002	0.05725
1960.00	5.1020	1.623	0.032	0.008	0.002	0.05745
1970.00	5.0761	1.624	0.031	0.008	0.002	0.05760
1980.00	5.0505	1.626	0.031	0.008	0.002	0.05780
1990.00	5.0251	1.627	0.032	0.008	0.002	0.05800
2000.00	5.0000	1.628	0.032	0.008	0.002	0.05815
2010.00	4.9751	1.629	0.031	0.009	0.002	0.05830
2020.00	4.9505	1.631	0.031	0.009	0.002	0.05850
2030.00	4.9261	1.632	0.031	0.009	0.002	0.05865
2040.00	4.9020	1.633	0.031	0.009	0.002	0.05880
2050.00	4.8780	1.633	0.031	0.009	0.002	0.05890
2060.00	4.8544	1.634	0.031	0.009	0.002	0.05905
2070.00	4.8309	1.636	0.030	0.009	0.002	0.05925
2080.00	4.8077	1.637	0.029	0.009	0.002	0.05940
2090.00	4.7847	1.638	0.029	0.009	0.002	0.05955
2100.00	4.7619	1.639	0.030	0.009	0.002	0.05970
2110.00	4.7393	1.641	0.030	0.009	0.002	0.05990
2120.00	4.7170	1.642	0.029	0.009	0.002	0.06005
2130.00	4.6948	1.642	0.029	0.009	0.002	0.06015
2140.00	4.6729	1.643	0.028	0.009	0.002	0.06025
2150.00	4.6512	1.644	0.028	0.009	0.002	0.06040
2160.00	4.6296	1.645	0.028	0.009	0.002	0.06055
2170.00	4.6083	1.646	0.028	0.009	0.002	0.06070

WN	WL	N	K	DN	DK	R
2180.00	4.5872	1.647	0.027	0.009	0.002	0.06085
2190.00	4.5662	1.649	0.026	0.009	0.002	0.06100
2200.00	4.5455	1.650	0.026	0.009	0.002	0.06115
2210.00	4.5249	1.651	0.026	0.009	0.002	0.06135
2220.00	4.5045	1.652	0.026	0.009	0.002	0.06150
2230.00	4.4843	1.653	0.026	0.009	0.002	0.06165
2240.00	4.4643	1.654	0.025	0.009	0.002	0.06180
2250.00	4.4444	1.655	0.025	0.009	0.002	0.06190
2260.00	4.4248	1.656	0.025	0.009	0.002	0.06200
2270.00	4.4053	1.657	0.025	0.009	0.002	0.06215
2280.00	4.3860	1.658	0.024	0.009	0.002	0.06230
2290.00	4.3668	1.659	0.023	0.009	0.002	0.06250
2300.00	4.3478	1.660	0.023	0.009	0.002	0.06265
2310.00	4.3290	1.662	0.023	0.009	0.002	0.06285
2320.00	4.3103	1.663	0.024	0.009	0.002	0.06300
2330.00	4.2918	1.664	0.024	0.009	0.002	0.06320
2340.00	4.2735	1.665	0.023	0.009	0.002	0.06330
2350.00	4.2553	1.666	0.023	0.009	0.002	0.06340
2360.00	4.2373	1.667	0.024	0.009	0.002	0.06355
2370.00	4.2194	1.667	0.024	0.009	0.002	0.06365
2380.00	4.2017	1.668	0.024	0.009	0.002	0.06375
2390.00	4.1841	1.669	0.024	0.009	0.002	0.06385
2400.00	4.1667	1.670	0.023	0.009	0.002	0.06395
2410.00	4.1494	1.670	0.023	0.009	0.002	0.06405
2420.00	4.1322	1.671	0.024	0.009	0.002	0.06415
2430.00	4.1152	1.672	0.024	0.009	0.002	0.06425
2440.00	4.0984	1.672	0.023	0.009	0.002	0.06435
2450.00	4.0816	1.673	0.022	0.009	0.002	0.06445
2460.00	4.0650	1.674	0.022	0.009	0.002	0.06455
2470.00	4.0486	1.674	0.023	0.009	0.002	0.06460
2480.00	4.0323	1.675	0.023	0.009	0.002	0.06470
2490.00	4.0161	1.676	0.022	0.009	0.002	0.06480
2500.00	4.0000	1.676	0.021	0.009	0.001	0.06490
2510.00	3.9841	1.677	0.020	0.009	0.001	0.06505
2520.00	3.9683	1.678	0.021	0.009	0.001	0.06520
2530.00	3.9526	1.679	0.021	0.009	0.001	0.06535
2540.00	3.9370	1.680	0.021	0.009	0.001	0.06550
2550.00	3.9216	1.681	0.020	0.009	0.001	0.06560
2560.00	3.9063	1.682	0.020	0.009	0.001	0.06570
2570.00	3.8911	1.683	0.021	0.009	0.001	0.06580
2580.00	3.8760	1.683	0.021	0.009	0.001	0.06590
2590.00	3.8610	1.684	0.021	0.009	0.001	0.06600
2600.00	3.8462	1.684	0.021	0.009	0.001	0.06605
2610.00	3.8314	1.685	0.020	0.009	0.001	0.06610
2620.00	3.8168	1.686	0.020	0.009	0.001	0.06625
2630.00	3.8023	1.687	0.020	0.009	0.001	0.06640
2640.00	3.7879	1.687	0.021	0.009	0.001	0.06650
2650.00	3.7736	1.688	0.020	0.009	0.001	0.06655
2660.00	3.7594	1.689	0.019	0.009	0.001	0.06665
2670.00	3.7453	1.690	0.019	0.009	0.001	0.06680

WN	WL	N	K	DN	DK	R
2680.00	3.7313	1.690	0.020	0.009	0.001	0.06690
2690.00	3.7175	1.691	0.020	0.009	0.001	0.06700
2700.00	3.7037	1.692	0.020	0.010	0.001	0.06710
2710.00	3.6900	1.692	0.019	0.010	0.001	0.06720
2720.00	3.6765	1.693	0.019	0.010	0.001	0.06730
2730.00	3.6630	1.694	0.019	0.010	0.001	0.06740
2740.00	3.6496	1.694	0.020	0.010	0.001	0.06750
2750.00	3.6364	1.695	0.020	0.010	0.001	0.06760
2760.00	3.6232	1.696	0.020	0.010	0.001	0.06775
2770.00	3.6101	1.697	0.020	0.010	0.001	0.06785
2780.00	3.5971	1.697	0.020	0.010	0.001	0.06790
2790.00	3.5842	1.698	0.021	0.010	0.001	0.06795
2800.00	3.5714	1.698	0.021	0.010	0.002	0.06805
2810.00	3.5587	1.699	0.021	0.010	0.001	0.06810
2820.00	3.5461	1.699	0.021	0.010	0.001	0.06815
2830.00	3.5336	1.699	0.021	0.010	0.001	0.06820
2840.00	3.5211	1.700	0.022	0.010	0.002	0.06825
2850.00	3.5088	1.700	0.022	0.010	0.002	0.06830
2860.00	3.4965	1.700	0.022	0.010	0.002	0.06835
2870.00	3.4843	1.701	0.022	0.010	0.002	0.06845
2880.00	3.4722	1.701	0.022	0.010	0.002	0.06850
2890.00	3.4602	1.701	0.022	0.010	0.002	0.06850
2900.00	3.4483	1.701	0.023	0.010	0.002	0.06850
2910.00	3.4364	1.701	0.023	0.010	0.002	0.06850
2920.00	3.4247	1.701	0.022	0.010	0.002	0.06850
2930.00	3.4130	1.702	0.021	0.010	0.001	0.06855
2940.00	3.4014	1.702	0.021	0.010	0.001	0.06860
2950.00	3.3898	1.702	0.021	0.010	0.002	0.06865
2960.00	3.3784	1.703	0.021	0.010	0.001	0.06870
2970.00	3.3670	1.704	0.021	0.010	0.001	0.06880
2980.00	3.3557	1.704	0.020	0.010	0.001	0.06890
2990.00	3.3445	1.705	0.020	0.010	0.001	0.06895
3000.00	3.3333	1.705	0.021	0.010	0.001	0.06900
3010.00	3.3223	1.705	0.021	0.010	0.001	0.06905
3020.00	3.3113	1.706	0.021	0.010	0.001	0.06910
3030.00	3.3003	1.706	0.020	0.010	0.001	0.06915
3040.00	3.2895	1.706	0.020	0.010	0.001	0.06920
3050.00	3.2787	1.707	0.020	0.010	0.001	0.06925
3060.00	3.2680	1.707	0.020	0.010	0.001	0.06930
3070.00	3.2573	1.707	0.021	0.010	0.001	0.06935
3080.00	3.2468	1.708	0.020	0.010	0.001	0.06940
3090.00	3.2362	1.708	0.020	0.010	0.001	0.06950
3100.00	3.2258	1.709	0.020	0.010	0.001	0.06955
3110.00	3.2154	1.709	0.020	0.010	0.001	0.06955
3120.00	3.2051	1.709	0.021	0.010	0.001	0.06960
3130.00	3.1949	1.709	0.020	0.010	0.001	0.06965
3140.00	3.1847	1.710	0.019	0.010	0.001	0.06970
3150.00	3.1746	1.711	0.019	0.010	0.001	0.06980
3160.00	3.1646	1.711	0.019	0.010	0.001	0.06985
3170.00	3.1546	1.712	0.020	0.010	0.001	0.06995



WN	WL	N	K	DN	DK	R
3180.00	3.1447	1.712	0.020	0.010	0.001	0.07000
3190.00	3.1348	1.712	0.020	0.010	0.001	0.07000
3200.00	3.1250	1.712	0.019	0.010	0.001	0.07000
3210.00	3.1153	1.712	0.019	0.010	0.001	0.07005
3220.00	3.1056	1.713	0.019	0.010	0.001	0.07010
3230.00	3.0960	1.713	0.020	0.010	0.001	0.07020
3240.00	3.0864	1.714	0.019	0.010	0.001	0.07025
3250.00	3.0769	1.714	0.019	0.010	0.001	0.07035
3260.00	3.0675	1.715	0.019	0.010	0.001	0.07040
3270.00	3.0581	1.715	0.020	0.010	0.001	0.07040
3280.00	3.0488	1.715	0.020	0.010	0.001	0.07045
3290.00	3.0395	1.716	0.019	0.010	0.001	0.07055
3300.00	3.0303	1.716	0.019	0.010	0.001	0.07065
3310.00	3.0211	1.717	0.020	0.010	0.001	0.07070
3320.00	3.0120	1.717	0.020	0.010	0.001	0.07070
3330.00	3.0030	1.717	0.021	0.010	0.001	0.07075
3340.00	2.9940	1.717	0.020	0.010	0.001	0.07080
3350.00	2.9851	1.718	0.020	0.010	0.001	0.07085
3360.00	2.9762	1.718	0.020	0.010	0.001	0.07085
3370.00	2.9674	1.717	0.021	0.010	0.001	0.07080
3380.00	2.9586	1.718	0.021	0.010	0.001	0.07085
3390.00	2.9499	1.718	0.021	0.010	0.001	0.07090
3400.00	2.9412	1.718	0.020	0.010	0.001	0.07090
3410.00	2.9326	1.718	0.020	0.010	0.001	0.07095
3420.00	2.9240	1.719	0.020	0.010	0.001	0.07100
3430.00	2.9155	1.719	0.020	0.010	0.001	0.07105
3440.00	2.9070	1.719	0.020	0.010	0.001	0.07110
3450.00	2.8986	1.720	0.020	0.010	0.001	0.07115
3460.00	2.8902	1.720	0.020	0.010	0.001	0.07120
3470.00	2.8818	1.720	0.020	0.010	0.001	0.07120
3480.00	2.8736	1.720	0.020	0.010	0.001	0.07120
3490.00	2.8653	1.720	0.021	0.010	0.001	0.07125
3500.00	2.8571	1.720	0.021	0.010	0.001	0.07125
3510.00	2.8490	1.721	0.020	0.010	0.001	0.07130
3520.00	2.8409	1.721	0.020	0.010	0.001	0.07135
3530.00	2.8329	1.721	0.021	0.010	0.001	0.07135
3540.00	2.8249	1.721	0.021	0.010	0.001	0.07135
3550.00	2.8169	1.722	0.021	0.010	0.001	0.07140
3560.00	2.8090	1.722	0.021	0.010	0.001	0.07140
3570.00	2.8011	1.722	0.020	0.010	0.001	0.07145
3580.00	2.7933	1.722	0.020	0.010	0.001	0.07150
3590.00	2.7855	1.722	0.021	0.010	0.001	0.07150
3600.00	2.7778	1.722	0.021	0.010	0.002	0.07150
3610.00	2.7701	1.723	0.021	0.010	0.001	0.07155
3620.00	2.7624	1.723	0.021	0.010	0.001	0.07160
3630.00	2.7548	1.723	0.021	0.010	0.001	0.07160
3640.00	2.7473	1.723	0.021	0.010	0.001	0.07155
3650.00	2.7397	1.722	0.021	0.010	0.002	0.07150
3660.00	2.7322	1.722	0.021	0.010	0.001	0.07150
3670.00	2.7248	1.722	0.020	0.010	0.001	0.07150

WN	WL	N	K	DN	DK	R
3680.00	2.7174	1.723	0.019	0.010	0.001	0.07155
3690.00	2.7100	1.723	0.019	0.010	0.001	0.07165
3700.00	2.7027	1.724	0.019	0.010	0.001	0.07175
3710.00	2.6954	1.724	0.020	0.010	0.001	0.07180
3720.00	2.6882	1.725	0.020	0.010	0.001	0.07185
3730.00	2.6810	1.725	0.020	0.010	0.001	0.07185
3740.00	2.6738	1.724	0.020	0.010	0.001	0.07180
3750.00	2.6667	1.724	0.020	0.010	0.001	0.07180
3760.00	2.6596	1.725	0.020	0.010	0.001	0.07190
3770.00	2.6525	1.725	0.020	0.010	0.001	0.07195
3780.00	2.6455	1.725	0.020	0.010	0.001	0.07195
3790.00	2.6385	1.725	0.020	0.010	0.001	0.07190
3800.00	2.6316	1.725	0.020	0.010	0.001	0.07195
3810.00	2.6247	1.726	0.020	0.010	0.001	0.07200
3820.00	2.6178	1.726	0.020	0.010	0.001	0.07205
3830.00	2.6110	1.726	0.020	0.010	0.001	0.07205
3840.00	2.6042	1.726	0.019	0.010	0.001	0.07205
3850.00	2.5974	1.726	0.019	0.010	0.001	0.07205
3860.00	2.5907	1.726	0.019	0.010	0.001	0.07210
3870.00	2.5840	1.727	0.020	0.010	0.001	0.07215
3880.00	2.5773	1.727	0.019	0.010	0.001	0.07220
3890.00	2.5707	1.727	0.019	0.010	0.001	0.07220
3900.00	2.5641	1.727	0.019	0.010	0.001	0.07220
3910.00	2.5575	1.727	0.019	0.010	0.001	0.07225
3920.00	2.5510	1.728	0.019	0.010	0.001	0.07230
3930.00	2.5445	1.728	0.019	0.010	0.001	0.07235
3940.00	2.5381	1.728	0.019	0.010	0.001	0.07235
3950.00	2.5316	1.728	0.018	0.010	0.001	0.07235
3960.00	2.5253	1.728	0.019	0.010	0.001	0.07240
3970.00	2.5189	1.729	0.019	0.010	0.001	0.07245
3980.00	2.5126	1.729	0.019	0.010	0.001	0.07250
3990.00	2.5063	1.729	0.019	0.010	0.001	0.07250
4000.00	2.5000	1.729	0.018	0.010	0.001	0.07250
4016.06	2.4900	1.730	0.018	0.010	0.001	0.07265
4032.26	2.4800	1.731	0.019	0.010	0.001	0.07270
4048.58	2.4700	1.731	0.019	0.010	0.001	0.07280
4065.04	2.4600	1.732	0.019	0.010	0.001	0.07285
4081.63	2.4500	1.732	0.020	0.010	0.001	0.07285
4098.36	2.4400	1.732	0.019	0.010	0.001	0.07285
4115.23	2.4300	1.732	0.020	0.010	0.001	0.07285
4132.23	2.4200	1.732	0.020	0.010	0.001	0.07290
4149.38	2.4100	1.732	0.020	0.010	0.001	0.07295
4166.67	2.4000	1.732	0.021	0.010	0.001	0.07295
4184.10	2.3900	1.732	0.020	0.010	0.001	0.07295
4201.68	2.3800	1.732	0.021	0.010	0.001	0.07295
4219.41	2.3700	1.732	0.020	0.010	0.001	0.07295
4237.29	2.3600	1.733	0.020	0.010	0.001	0.07300
4255.32	2.3500	1.733	0.020	0.010	0.001	0.07300
4273.50	2.3400	1.733	0.020	0.010	0.001	0.07300
4291.85	2.3300	1.733	0.020	0.010	0.001	0.07300

WN	WL	N	K	DN	DK	R
4310.34	2.3200	1.733	0.020	0.010	0.001	0.07305
4329.00	2.3100	1.733	0.020	0.010	0.001	0.07310
4347.83	2.3000	1.734	0.020	0.010	0.001	0.07315
4366.81	2.2900	1.734	0.020	0.010	0.001	0.07320
4385.96	2.2800	1.734	0.020	0.010	0.001	0.07320
4405.29	2.2700	1.734	0.020	0.010	0.001	0.07320
4424.78	2.2600	1.734	0.021	0.010	0.001	0.07320
4444.44	2.2500	1.734	0.020	0.010	0.001	0.07320
4464.29	2.2400	1.734	0.020	0.010	0.001	0.07320
4484.30	2.2300	1.734	0.021	0.010	0.001	0.07320
4504.50	2.2200	1.734	0.020	0.010	0.001	0.07315
4524.89	2.2100	1.734	0.020	0.010	0.001	0.07320
4545.45	2.2000	1.734	0.019	0.010	0.001	0.07325
4566.21	2.1900	1.735	0.019	0.010	0.001	0.07330
4587.16	2.1800	1.735	0.019	0.010	0.001	0.07335
4608.29	2.1700	1.735	0.020	0.010	0.001	0.07335
4629.63	2.1600	1.735	0.019	0.010	0.001	0.07335
4651.16	2.1500	1.735	0.019	0.010	0.001	0.07335
4672.90	2.1400	1.735	0.019	0.010	0.001	0.07340
4694.84	2.1300	1.736	0.019	0.010	0.001	0.07345
4716.98	2.1200	1.736	0.018	0.010	0.001	0.07350
4739.34	2.1100	1.736	0.018	0.010	0.001	0.07355
4761.90	2.1000	1.737	0.018	0.010	0.001	0.07360
4784.69	2.0900	1.737	0.019	0.010	0.001	0.07365
4807.69	2.0800	1.737	0.019	0.010	0.001	0.07370
4830.92	2.0700	1.737	0.019	0.010	0.001	0.07370
4854.37	2.0600	1.737	0.019	0.010	0.001	0.07370
4878.05	2.0500	1.737	0.019	0.010	0.001	0.07370
4901.96	2.0400	1.737	0.018	0.010	0.001	0.07370
4926.11	2.0300	1.738	0.018	0.010	0.001	0.07375
4950.50	2.0200	1.738	0.018	0.010	0.001	0.07380
4975.12	2.0100	1.739	0.018	0.010	0.001	0.07385
5000.00	2.0000	1.739	0.018	0.010	0.001	0.07390
5025.13	1.9900	1.739	0.018	0.010	0.001	0.07395
5050.51	1.9800	1.740	0.018	0.010	0.001	0.07405
5076.14	1.9700	1.740	0.018	0.010	0.001	0.07410
5102.04	1.9600	1.741	0.019	0.010	0.001	0.07415
5128.21	1.9500	1.741	0.019	0.010	0.001	0.07415
5154.64	1.9400	1.741	0.019	0.010	0.001	0.07415
5181.35	1.9300	1.741	0.019	0.010	0.001	0.07415
5208.33	1.9200	1.741	0.019	0.010	0.001	0.07415
5235.60	1.9100	1.741	0.019	0.010	0.001	0.07425
5263.16	1.9000	1.741	0.020	0.010	0.001	0.07425
5291.01	1.8900	1.741	0.020	0.010	0.001	0.07415
5319.15	1.8800	1.740	0.020	0.010	0.001	0.07405
5347.59	1.8700	1.739	0.019	0.010	0.001	0.07395
5376.34	1.8600	1.739	0.018	0.010	0.001	0.07395
5405.41	1.8500	1.740	0.017	0.010	0.001	0.07405
5434.78	1.8400	1.741	0.017	0.010	0.001	0.07415
5464.48	1.8300	1.742	0.017	0.010	0.001	0.07430

WN	WL	N	K	DN	DK	R
5494.51	1.8200	1.742	0.018	0.010	0.001	0.07430
5524.86	1.8100	1.742	0.017	0.010	0.001	0.07435
5555.56	1.8000	1.743	0.017	0.010	0.001	0.07445
5586.59	1.7900	1.743	0.017	0.010	0.001	0.07455
5617.98	1.7800	1.744	0.018	0.010	0.001	0.07460
5649.72	1.7700	1.744	0.018	0.010	0.001	0.07460
5681.82	1.7600	1.743	0.019	0.010	0.001	0.07455
5714.29	1.7500	1.743	0.019	0.010	0.001	0.07455
5747.13	1.7400	1.743	0.018	0.010	0.001	0.07455
5780.35	1.7300	1.744	0.019	0.010	0.001	0.07460
5813.95	1.7200	1.744	0.019	0.010	0.001	0.07465
5847.95	1.7100	1.744	0.019	0.010	0.001	0.07465
5882.35	1.7000	1.744	0.019	0.010	0.001	0.07465
5917.16	1.6900	1.744	0.019	0.010	0.001	0.07465
5952.38	1.6800	1.744	0.019	0.010	0.001	0.07465
5988.02	1.6700	1.744	0.019	0.010	0.001	0.07465
6024.10	1.6600	1.744	0.019	0.010	0.001	0.07465
6060.61	1.6500	1.744	0.019	0.010	0.001	0.07465
6097.56	1.6400	1.744	0.018	0.010	0.001	0.07470
6134.97	1.6300	1.744	0.018	0.010	0.001	0.07470
6172.84	1.6200	1.745	0.018	0.010	0.001	0.07475
6211.18	1.6100	1.745	0.018	0.010	0.001	0.07480
6250.00	1.6000	1.745	0.018	0.010	0.001	0.07480
6289.31	1.5900	1.745	0.018	0.010	0.001	0.07480
6329.11	1.5800	1.745	0.018	0.010	0.001	0.07485
6369.43	1.5700	1.746	0.018	0.010	0.001	0.07495
6410.26	1.5600	1.746	0.018	0.010	0.001	0.07500
6451.61	1.5500	1.747	0.018	0.010	0.001	0.07505
6493.51	1.5400	1.746	0.019	0.010	0.001	0.07500
6535.95	1.5300	1.746	0.018	0.010	0.001	0.07500
6578.95	1.5200	1.747	0.018	0.010	0.001	0.07505
6622.52	1.5100	1.747	0.018	0.010	0.001	0.07510
6666.67	1.5000	1.747	0.019	0.010	0.001	0.07515
6711.41	1.4900	1.747	0.019	0.010	0.001	0.07515
6756.76	1.4800	1.748	0.018	0.010	0.001	0.07520
6802.72	1.4700	1.748	0.019	0.010	0.001	0.07520
6849.32	1.4600	1.748	0.019	0.010	0.001	0.07525
6896.55	1.4500	1.748	0.020	0.010	0.001	0.07525
6944.44	1.4400	1.748	0.019	0.010	0.001	0.07520
6993.01	1.4300	1.748	0.019	0.010	0.001	0.07520
7042.25	1.4200	1.748	0.019	0.010	0.001	0.07525
7092.20	1.4100	1.748	0.020	0.010	0.001	0.07525
7142.86	1.4000	1.748	0.020	0.010	0.001	0.07520
7194.24	1.3900	1.748	0.020	0.010	0.001	0.07520
7246.38	1.3800	1.748	0.020	0.010	0.001	0.07520
7299.27	1.3700	1.748	0.019	0.010	0.001	0.07520
7352.94	1.3600	1.748	0.020	0.010	0.001	0.07520
7407.41	1.3500	1.748	0.019	0.010	0.001	0.07520
7462.69	1.3400	1.748	0.019	0.010	0.001	0.07520
7518.80	1.3300	1.748	0.019	0.010	0.001	0.07520

WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.748	0.019	0.010	0.001	0.07525
7633.59	1.3100	1.748	0.019	0.010	0.001	0.07530
7692.31	1.3000	1.749	0.019	0.011	0.001	0.07535
7751.94	1.2900	1.749	0.019	0.011	0.001	0.07535
7812.50	1.2800	1.749	0.019	0.011	0.001	0.07540
7874.02	1.2700	1.749	0.019	0.011	0.001	0.07545
7936.51	1.2600	1.749	0.020	0.011	0.001	0.07545
8000.00	1.2500	1.749	0.020	0.011	0.001	0.07545
8064.52	1.2400	1.749	0.020	0.011	0.001	0.07545
8130.08	1.2300	1.749	0.021	0.011	0.001	0.07545
8196.72	1.2200	1.749	0.020	0.011	0.001	0.07540
8264.46	1.2100	1.749	0.021	0.011	0.001	0.07540
8333.33	1.2000	1.749	0.021	0.011	0.001	0.07535
8403.36	1.1900	1.749	0.020	0.011	0.001	0.07535
8474.58	1.1800	1.749	0.020	0.011	0.001	0.07535
8547.01	1.1700	1.749	0.020	0.011	0.001	0.07535
8620.69	1.1600	1.749	0.020	0.011	0.001	0.07535
8695.65	1.1500	1.749	0.020	0.011	0.001	0.07540
8771.93	1.1400	1.749	0.020	0.011	0.001	0.07540
8849.56	1.1300	1.749	0.020	0.011	0.001	0.07540
8928.57	1.1200	1.749	0.020	0.011	0.001	0.07540
9009.01	1.1100	1.749	0.020	0.011	0.001	0.07540
9090.91	1.1000	1.749	0.020	0.011	0.001	0.07540
9174.31	1.0900	1.749	0.020	0.011	0.001	0.07540
9259.26	1.0800	1.749	0.020	0.011	0.001	0.07540
9345.79	1.0700	1.749	0.020	0.011	0.001	0.07540
9433.96	1.0600	1.749	0.020	0.011	0.001	0.07545
9523.81	1.0500	1.749	0.020	0.011	0.001	0.07545
9615.38	1.0400	1.749	0.020	0.011	0.001	0.07545
9708.74	1.0300	1.749	0.020	0.011	0.001	0.07545
9803.92	1.0200	1.749	0.020	0.011	0.001	0.07545
9900.99	1.0100	1.749	0.020	0.011	0.001	0.07545
10000.00	1.0000	1.749	0.020	0.011	0.001	0.07545
10101.01	0.9900	1.749	0.020	0.011	0.001	0.07545
10204.08	0.9800	1.750	0.020	0.011	0.001	0.07550
10309.28	0.9700	1.750	0.020	0.011	0.001	0.07550
10416.67	0.9600	1.750	0.020	0.011	0.001	0.07550
10526.32	0.9500	1.750	0.020	0.011	0.001	0.07550
10638.30	0.9400	1.750	0.020	0.011	0.001	0.07550
10752.69	0.9300	1.750	0.020	0.011	0.001	0.07550
10869.57	0.9200	1.750	0.020	0.011	0.001	0.07550
10989.01	0.9100	1.750	0.020	0.011	0.001	0.07550
11111.11	0.9000	1.750	0.020	0.011	0.001	0.07550
11235.96	0.8900	1.750	0.020	0.011	0.001	0.07555
11363.64	0.8800	1.750	0.020	0.011	0.001	0.07555
11494.25	0.8700	1.750	0.020	0.011	0.001	0.07555
11627.91	0.8600	1.750	0.020	0.011	0.001	0.07555
11764.71	0.8500	1.750	0.020	0.011	0.001	0.07555
11904.76	0.8400	1.750	0.020	0.011	0.001	0.07555
12048.19	0.8300	1.750	0.020	0.011	0.001	0.07555

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.750	0.020	0.011	0.001	0.07555
12345.68	0.8100	1.750	0.020	0.011	0.001	0.07555
12500.00	0.8000	1.750	0.020	0.011	0.001	0.07560
12658.23	0.7900	1.750	0.020	0.011	0.001	0.07560
12820.51	0.7800	1.750	0.020	0.011	0.001	0.07560
12987.01	0.7700	1.750	0.020	0.011	0.001	0.07560
13157.89	0.7600	1.750	0.020	0.011	0.001	0.07560
13333.33	0.7500	1.750	0.020	0.011	0.001	0.07560
13513.51	0.7400	1.750	0.020	0.011	0.001	0.07560
13698.63	0.7300	1.750	0.020	0.011	0.001	0.07560
13888.89	0.7200	1.751	0.020	0.011	0.001	0.07565
14084.51	0.7100	1.751	0.020	0.011	0.001	0.07565
14285.71	0.7000	1.751	0.020	0.011	0.001	0.07565
14492.75	0.6900	1.751	0.021	0.011	0.001	0.07565
14705.88	0.6800	1.751	0.020	0.011	0.001	0.07565
14925.37	0.6700	1.751	0.020	0.011	0.001	0.07565
15151.52	0.6600	1.751	0.020	0.011	0.001	0.07570
15384.62	0.6500	1.751	0.020	0.011	0.001	0.07570
15625.00	0.6400	1.751	0.020	0.011	0.001	0.07570
15873.02	0.6300	1.751	0.020	0.011	0.001	0.07575
16129.03	0.6200	1.751	0.021	0.011	0.001	0.07575
16393.44	0.6100	1.751	0.020	0.011	0.001	0.07575
16666.67	0.6000	1.752	0.020	0.011	0.001	0.07580
16949.15	0.5900	1.752	0.020	0.011	0.001	0.07580
17241.38	0.5800	1.752	0.020	0.011	0.001	0.07585
17543.86	0.5700	1.752	0.021	0.011	0.001	0.07585
17857.14	0.5600	1.752	0.020	0.011	0.001	0.07585
18181.82	0.5500	1.753	0.021	0.011	0.001	0.07590
18518.52	0.5400	1.753	0.021	0.011	0.001	0.07590
18867.92	0.5300	1.753	0.020	0.011	0.001	0.07590
19230.77	0.5200	1.753	0.021	0.011	0.001	0.07600
19607.84	0.5100	1.753	0.021	0.011	0.001	0.07600
20000.00	0.5000	1.754	0.021	0.011	0.001	0.07605
20408.16	0.4900	1.754	0.021	0.011	0.001	0.07605
20833.33	0.4800	1.754	0.021	0.011	0.001	0.07605
21276.60	0.4700	1.754	0.021	0.011	0.001	0.07610
21739.13	0.4600	1.754	0.021	0.011	0.001	0.07610
22222.22	0.4500	1.754	0.021	0.011	0.001	0.07610
22727.27	0.4400	1.754	0.021	0.011	0.001	0.07615
23255.81	0.4300	1.754	0.020	0.011	0.001	0.07615
23809.52	0.4200	1.754	0.019	0.011	0.001	0.07615
24390.24	0.4100	1.755	0.019	0.011	0.001	0.07625
25000.00	0.4000	1.756	0.019	0.011	0.001	0.07640
25641.03	0.3900	1.757	0.019	0.011	0.001	0.07650
26315.79	0.3800	1.757	0.018	0.011	0.001	0.07655
27027.03	0.3700	1.757	0.018	0.011	0.001	0.07655
27777.78	0.3600	1.757	0.017	0.011	0.001	0.07655
28571.43	0.3500	1.758	0.015	0.011	0.001	0.07670
29411.76	0.3400	1.760	0.014	0.011	0.001	0.07690
30303.03	0.3300	1.761	0.013	0.011	0.001	0.07710

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.762	0.012	0.011	0.001	0.07720
32258.06	0.3100	1.762	0.010	0.011	0.001	0.07730
33333.33	0.3000	1.762	0.007	0.011	0.001	0.07730
34482.76	0.2900	1.767	0.001	0.011	0.000	0.07795
35714.29	0.2800	1.772	-0.001	0.011	0.000	0.07875
37037.04	0.2700	1.776	-0.004	0.011	0.000	0.07925
38461.54	0.2600	1.779	-0.010	0.011	0.001	0.07980
40000.00	0.2500	1.789	-0.016	0.011	0.001	0.08115
41666.67	0.2400	1.793	-0.019	0.011	0.001	0.08185
43478.26	0.2300	1.805	-0.026	0.012	0.002	0.08370
45454.55	0.2200	1.817	-0.039	0.012	0.003	0.08545
47619.05	0.2100	1.831	-0.052	0.012	0.004	0.08770

**Blank**



## 5.2 Oxidized Aluminum Mirror

The reflectance spectrum of the first surface aluminum mirror and the resultant complex refractive index  $n+ik$  are presented in Figs. 13-16. Note that at about  $540\text{ cm}^{-1}$  in the infrared that  $n$  and  $k$  cross. This is a phenomenon that contradicts the Drude model for the dielectric function of a metal, and suggests that the reflectance data are in error at lower frequencies. Several attempts to find an error in the reflectance spectrum and the trial of several extrapolation procedures other than the Drude model yielded the same crossing of  $n$  and  $k$ .

We suspect there is an error in obtaining the reflectance spectrum. For this particular sample the infrared reflectance was measured relative to a copper mirror. The relative reflectance was then multiplied by the reflectance of Copper.<sup>1</sup> We suspect that the reflectance spectrum of copper is in error and introduced an error in the reflectance spectrum of the oxidized Aluminum mirror that made  $n$  and  $k$  cross at about  $540\text{ cm}^{-1}$ . According to the Drude model  $n$  and  $k$  should cross at  $\omega_p$  the plasma frequency in the vacuum ultra-violet region. The Drude model, however, does not, nor should it, account for the band at  $810\text{ nm}$  and electronic bands in the vacuum ultra-violet.

We recently placed an order, using university funds, for a V-W reflectance accessory for the 580 spectrophotometer. When this accessory arrives sometime in July 1984, we will measure the absolute reflectance of the aluminum mirror. The absolute reflectance spectrum will then provide values of  $n+ik$  that should correct this problem.

We believe, however, that values of  $n$  and  $k$  at frequencies greater than about  $800\text{ cm}^{-1}$  are valid.

The first derivative reflectance spectrum of the oxidized aluminum mirror is presented in Fig. 17. We note minima, in this spectrum at the spectral positions of the water monomer band at about  $3,700\text{ cm}^{-1}$ , water cluster band at about  $3,100\text{ cm}^{-1}$ , the  $\text{CO}_2$  band at about  $2,300\text{ cm}^{-1}$ , the water band in the  $1,700\text{--}1,300\text{ cm}^{-1}$  region, and a minimum at  $921\text{ cm}^{-1}$  that we believe denotes the presence of  $\gamma\text{-Al}_2\text{O}_3$  or amorphous  $\text{Al}_2\text{O}_3$  on the surface of the mirror. The  $921\text{ cm}^{-1}$  band for  $\text{Al}_2\text{O}_3$  does not appear in our spectra for  $\alpha\text{-Al}_2\text{O}_3$  (sapphire). The  $921\text{ cm}^{-1}$  band, however, is consistent with the investigations of Bruesch, et. al.<sup>2</sup>

Tabulations of the measured reflectance and of  $n$  and  $k$  are also presented in the following pages.

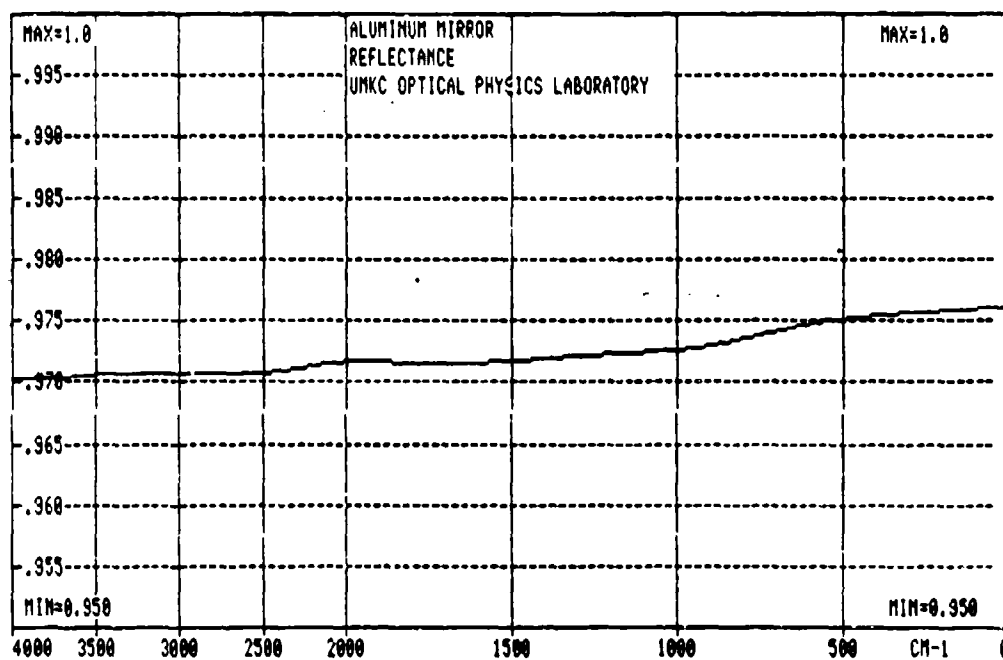


Figure 13. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of the oxidized aluminum mirror.

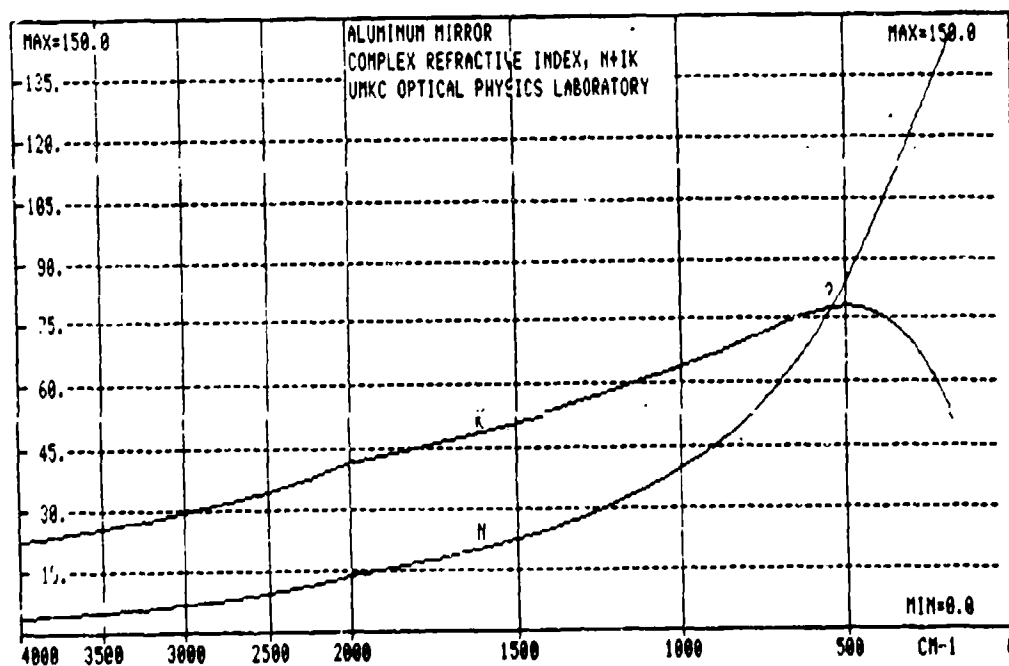


Figure 14. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  obtained for the oxidized aluminum mirror.

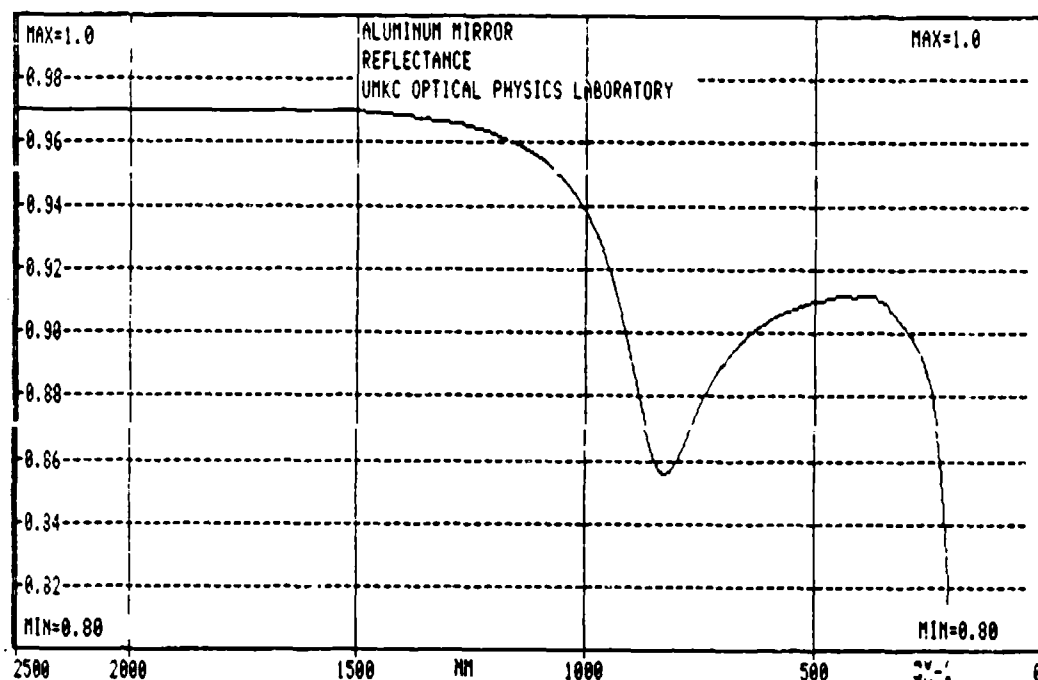


Figure 15. The uv-vis-nir (2,500-200 nm) reflectance spectrum of the oxidized aluminum mirror.

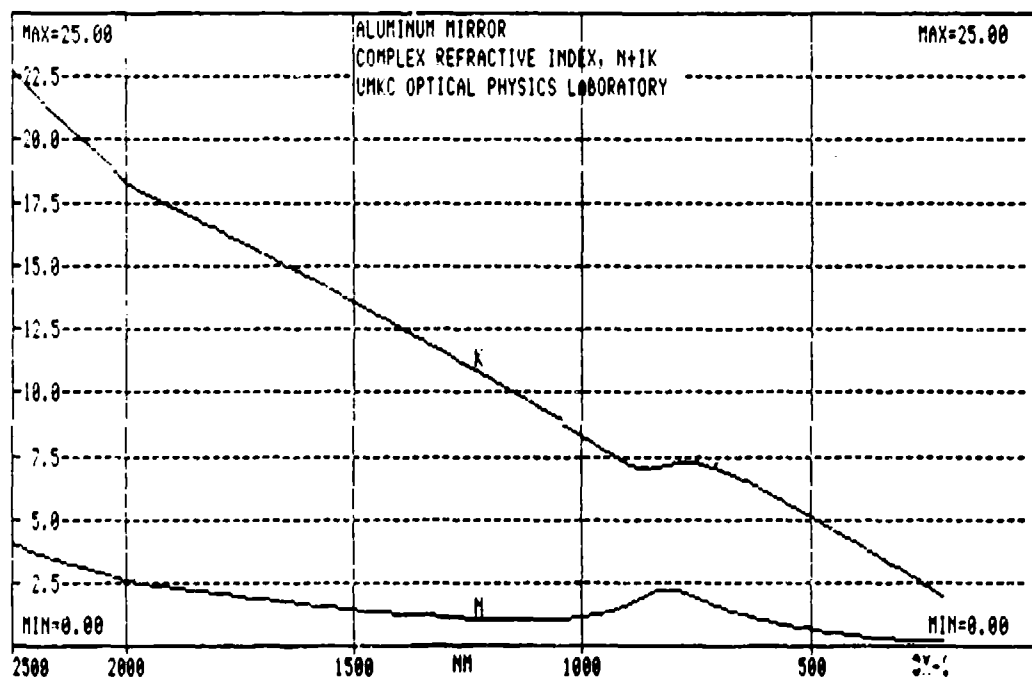


Figure 16. The uv-vis-nir (2,500-210 nm) complex refractive indices  $n$  and  $k$  of the oxidized aluminum mirror.

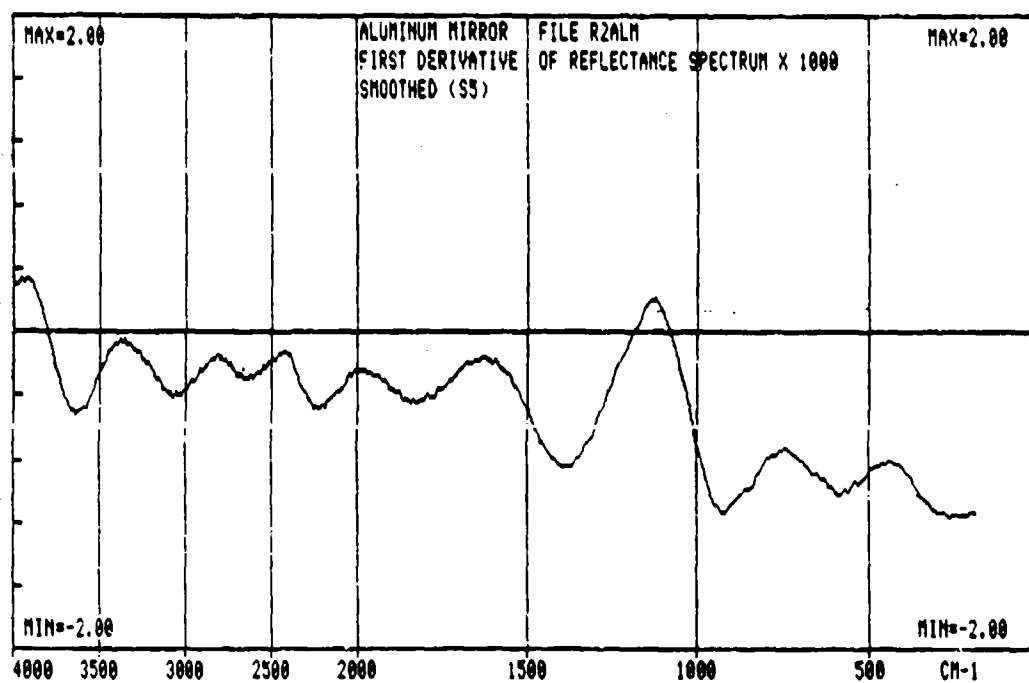


Figure 17. The first derivative of the infrared reflectance spectrum of the oxidized aluminum mirror.

WN	WL	N	K	DN	DK	R
180.00	55.5556	144.987	50.495	95.820	76.740	0.97585
190.00	52.6316	143.035	52.402	92.086	78.539	0.97580
200.00	50.0000	141.329	54.353	88.687	80.458	0.97580
210.00	47.6190	139.468	56.347	85.042	82.270	0.97580
220.00	45.4545	137.428	57.985	81.335	83.391	0.97575
230.00	43.4783	135.626	59.688	77.936	84.672	0.97575
240.00	41.6667	133.674	61.419	74.326	85.826	0.97575
250.00	40.0000	131.585	62.800	70.744	86.344	0.97570
260.00	38.4615	129.720	64.263	67.435	87.056	0.97570
270.00	37.0370	127.718	65.740	63.955	87.628	0.97570
280.00	35.7143	125.621	66.873	60.585	87.628	0.97565
290.00	34.4828	123.732	68.106	57.444	87.848	0.97565
300.00	33.3333	121.711	69.345	54.161	87.924	0.97565
310.00	32.2581	119.628	70.253	51.042	87.499	0.97560
320.00	31.2500	117.737	71.275	48.112	87.309	0.97560
330.00	30.3030	115.720	72.294	45.062	86.975	0.97560
340.00	29.4118	113.665	73.003	42.209	86.210	0.97555
350.00	28.5714	111.740	73.853	39.443	85.670	0.97555
360.00	27.7778	109.758	74.422	36.838	84.740	0.97550
370.00	27.0270	107.927	75.125	34.341	84.048	0.97550
380.00	26.3158	105.982	75.817	31.757	83.220	0.97550
390.00	25.6410	104.035	76.228	29.403	82.071	0.97545
400.00	25.0000	102.185	76.788	27.078	81.132	0.97545
410.00	24.3902	100.305	77.094	24.937	79.892	0.97540
420.00	23.8095	98.507	77.550	22.801	78.850	0.97540
430.00	23.2558	96.686	77.764	20.851	77.540	0.97535
440.00	22.7273	94.927	78.129	18.880	76.411	0.97530
450.00	22.2222	93.118	78.268	17.058	75.019	0.97530
460.00	21.7391	91.458	78.350	15.447	73.695	0.97525
470.00	21.2766	89.811	78.588	13.760	72.513	0.97525
480.00	20.8333	88.156	78.611	12.252	71.129	0.97520
490.00	20.4082	86.533	78.780	10.688	69.893	0.97520
500.00	20.0000	84.870	78.745	9.269	68.449	0.97515
510.00	19.6078	83.303	78.677	7.981	67.058	0.97510
520.00	19.2308	81.798	78.582	6.788	65.701	0.97505
530.00	18.8679	80.377	78.463	5.705	64.398	0.97500
540.00	18.5185	78.929	78.485	4.514	63.180	0.97500
550.00	18.1818	77.449	78.322	4.853	61.892	0.97495
560.00	17.8571	76.047	78.140	5.794	60.697	0.97490
570.00	17.5439	74.688	77.941	6.666	59.526	0.97485
580.00	17.2414	73.365	77.725	7.479	58.375	0.97480
590.00	16.9492	72.078	77.495	8.235	57.246	0.97475
600.00	16.6667	70.825	77.251	8.930	56.137	0.97470
610.00	16.3934	69.602	76.995	9.593	55.048	0.97465
620.00	16.1290	68.404	76.727	10.206	53.975	0.97460
630.00	15.8730	67.226	76.447	10.780	52.915	0.97455
640.00	15.6250	66.041	76.152	11.333	51.846	0.97450
650.00	15.3846	64.964	75.730	11.696	50.769	0.97440
660.00	15.1515	63.946	75.438	12.117	49.838	0.97435
670.00	14.9254	62.919	75.134	12.525	48.897	0.97430

WN	WL	N	K	DN	DK	R
680.00	14.7059	61.904	74.821	12.907	47.966	0.97425
690.00	14.4928	60.902	74.501	13.264	47.045	0.97420
700.00	14.2857	59.894	74.169	13.607	46.119	0.97415
710.00	14.0845	58.982	73.730	13.798	45.196	0.97405
720.00	13.8889	58.112	73.412	14.053	44.389	0.97400
730.00	13.6986	57.232	73.084	14.299	43.574	0.97395
740.00	13.5135	56.362	72.751	14.528	42.769	0.97390
750.00	13.3333	55.503	72.412	14.740	41.974	0.97385
760.00	13.1579	54.635	72.063	14.941	41.173	0.97380
770.00	12.9870	53.858	71.624	15.019	40.383	0.97370
780.00	12.8205	53.111	71.297	15.162	39.689	0.97365
790.00	12.6582	52.356	70.962	15.297	38.990	0.97360
800.00	12.5000	51.611	70.623	15.421	38.299	0.97355
810.00	12.3457	50.874	70.282	15.533	37.619	0.97350
820.00	12.1951	50.148	69.937	15.633	36.948	0.97345
830.00	12.0482	49.415	69.585	15.725	36.273	0.97340
840.00	11.9048	48.767	69.158	15.718	35.617	0.97330
850.00	11.7647	48.140	68.834	15.774	35.037	0.97325
860.00	11.6279	47.505	68.502	15.825	34.452	0.97320
870.00	11.4943	46.879	68.170	15.868	33.876	0.97315
880.00	11.3636	46.265	67.838	15.903	33.313	0.97310
890.00	11.2360	45.665	67.506	15.929	32.762	0.97305
900.00	11.1111	45.078	67.176	15.948	32.224	0.97300
910.00	10.9890	44.505	66.849	15.959	31.701	0.97295
920.00	10.8696	43.951	66.525	15.963	31.194	0.97290
930.00	10.7527	43.429	66.211	15.959	30.716	0.97285
940.00	10.6383	42.856	65.959	16.017	30.242	0.97285
950.00	10.5263	42.300	65.622	16.006	29.738	0.97280
960.00	10.4167	41.779	65.298	15.987	29.265	0.97275
970.00	10.3093	41.294	64.987	15.962	28.824	0.97270
980.00	10.2041	40.762	64.734	15.993	28.387	0.97270
990.00	10.1010	40.253	64.404	15.961	27.928	0.97265
1000.00	10.0000	39.791	64.095	15.923	27.511	0.97260
1010.00	9.9010	39.289	63.844	15.938	27.100	0.97260
1020.00	9.8039	38.825	63.527	15.892	26.684	0.97255
1030.00	9.7087	38.335	63.273	15.897	26.284	0.97255
1040.00	9.6154	37.885	62.957	15.844	25.881	0.97250
1050.00	9.5238	37.410	62.703	15.840	25.495	0.97250
1060.00	9.4340	36.975	62.388	15.780	25.108	0.97245
1070.00	9.3458	36.516	62.135	15.768	24.737	0.97245
1080.00	9.2593	36.100	61.825	15.702	24.367	0.97240
1090.00	9.1743	35.672	61.581	15.683	24.022	0.97240
1100.00	9.0909	35.216	61.317	15.659	23.655	0.97240
1110.00	9.0090	34.814	61.007	15.585	23.301	0.97235
1120.00	8.9286	34.402	60.761	15.556	22.970	0.97235
1130.00	8.8496	33.963	60.496	15.520	22.619	0.97235
1140.00	8.7719	33.578	60.186	15.440	22.281	0.97230
1150.00	8.6957	33.171	59.933	15.401	21.957	0.97230
1160.00	8.6207	32.807	59.633	15.318	21.640	0.97225
1170.00	8.5470	32.432	59.393	15.276	21.343	0.97225

WN	WL	N	K	DN	DK	R
1180.00	8.4746	32.044	59.142	15.229	21.035	0.97225
1190.00	8.4034	31.643	58.879	15.177	20.719	0.97225
1200.00	8.3333	31.297	58.579	15.087	20.420	0.97220
1210.00	8.2645	30.941	58.339	15.036	20.140	0.97220
1220.00	8.1967	30.572	58.088	14.981	19.851	0.97220
1230.00	8.1301	30.192	57.825	14.920	19.553	0.97220
1240.00	8.0645	29.864	57.528	14.825	19.273	0.97215
1250.00	8.0000	29.524	57.287	14.766	19.008	0.97215
1260.00	7.9365	29.165	57.030	14.701	18.729	0.97215
1270.00	7.8740	28.855	56.739	14.604	18.465	0.97210
1280.00	7.8125	28.531	56.502	14.541	18.216	0.97210
1290.00	7.7519	28.189	56.248	14.472	17.952	0.97210
1300.00	7.6923	27.894	55.963	14.374	17.703	0.97205
1310.00	7.6336	27.586	55.729	14.308	17.467	0.97205
1320.00	7.5758	27.259	55.478	14.236	17.217	0.97205
1330.00	7.5188	26.979	55.199	14.137	16.982	0.97200
1340.00	7.4627	26.684	54.968	14.068	16.758	0.97200
1350.00	7.4074	26.372	54.721	13.994	16.522	0.97200
1360.00	7.3529	26.105	54.446	13.894	16.300	0.97195
1370.00	7.2993	25.824	54.219	13.824	16.088	0.97195
1380.00	7.2464	25.524	53.974	13.747	15.863	0.97195
1390.00	7.1942	25.267	53.703	13.647	15.651	0.97190
1400.00	7.1429	24.988	53.470	13.572	15.442	0.97190
1410.00	7.0922	24.743	53.206	13.473	15.241	0.97185
1420.00	7.0423	24.474	52.979	13.399	15.042	0.97185
1430.00	6.9930	24.240	52.721	13.301	14.850	0.97180
1440.00	6.9444	23.982	52.498	13.227	14.660	0.97180
1450.00	6.8966	23.758	52.247	13.131	14.478	0.97175
1460.00	6.8493	23.518	52.036	13.060	14.301	0.97175
1470.00	6.8027	23.262	51.809	12.983	14.114	0.97175
1480.00	6.7568	23.047	51.561	12.888	13.940	0.97170
1490.00	6.7114	22.816	51.354	12.816	13.772	0.97170
1500.00	6.6667	22.571	51.131	12.739	13.594	0.97170
1510.00	6.6225	22.365	50.889	12.645	13.430	0.97165
1520.00	6.5789	22.145	50.685	12.574	13.271	0.97165
1530.00	6.5359	21.911	50.468	12.497	13.103	0.97165
1540.00	6.4935	21.716	50.232	12.405	12.948	0.97160
1550.00	6.4516	21.508	50.034	12.334	12.798	0.97160
1560.00	6.4103	21.292	49.829	12.261	12.644	0.97160
1570.00	6.3694	21.069	49.615	12.184	12.486	0.97160
1580.00	6.3291	20.885	49.385	12.093	12.341	0.97155
1590.00	6.2893	20.687	49.192	12.024	12.201	0.97155
1600.00	6.2500	20.483	48.991	11.951	12.057	0.97155
1610.00	6.2112	20.273	48.783	11.875	11.909	0.97155
1620.00	6.1728	20.102	48.561	11.797	11.775	0.97150
1630.00	6.1350	19.917	48.375	11.719	11.646	0.97150
1640.00	6.0976	19.728	48.183	11.649	11.514	0.97150
1650.00	6.0606	19.539	47.990	11.577	11.382	0.97150
1660.00	6.0241	19.351	47.798	11.506	11.252	0.97150
1670.00	5.9880	19.166	47.605	11.435	11.124	0.97150

WN	WL	N	K	DN	DK	R
1680.00	5.9524	18.982	47.413	11.363	10.997	0.97150
1690.00	5.9172	18.801	47.222	11.292	10.872	0.97150
1700.00	5.8824	18.622	47.032	11.221	10.748	0.97150
1710.00	5.8480	18.444	46.842	11.150	10.627	0.97150
1720.00	5.8140	18.269	46.654	11.079	10.507	0.97150
1730.00	5.7803	18.097	46.466	11.009	10.389	0.97150
1740.00	5.7471	17.926	46.280	10.939	10.273	0.97150
1750.00	5.7143	17.758	46.095	10.869	10.159	0.97150
1760.00	5.6818	17.593	45.911	10.800	10.047	0.97150
1770.00	5.6497	17.431	45.730	10.731	9.938	0.97150
1780.00	5.6180	17.276	45.556	10.665	9.833	0.97150
1790.00	5.5866	17.091	45.393	10.608	9.720	0.97155
1800.00	5.5556	16.924	45.200	10.534	9.608	0.97155
1810.00	5.5249	16.763	45.015	10.464	9.500	0.97155
1820.00	5.4945	16.606	44.833	10.395	9.396	0.97155
1830.00	5.4645	16.453	44.654	10.326	9.293	0.97155
1840.00	5.4348	16.302	44.476	10.259	9.193	0.97155
1850.00	5.4054	16.158	44.306	10.194	9.098	0.97155
1860.00	5.3763	15.986	44.145	10.136	8.994	0.97160
1870.00	5.3476	15.831	43.958	10.064	8.892	0.97160
1880.00	5.3191	15.681	43.777	9.995	8.794	0.97160
1890.00	5.2910	15.535	43.598	9.927	8.698	0.97160
1900.00	5.2632	15.392	43.421	9.859	8.604	0.97160
1910.00	5.2356	15.250	43.246	9.792	8.511	0.97160
1920.00	5.2083	15.110	43.072	9.725	8.420	0.97160
1930.00	5.1813	14.972	42.898	9.659	8.330	0.97160
1940.00	5.1546	14.836	42.726	9.593	8.242	0.97160
1950.00	5.1282	14.701	42.555	9.528	8.155	0.97160
1960.00	5.1020	14.568	42.384	9.463	8.069	0.97160
1970.00	5.0761	14.436	42.214	9.398	7.984	0.97160
1980.00	5.0505	14.305	42.045	9.334	7.901	0.97160
1990.00	5.0251	14.176	41.877	9.269	7.818	0.97160
2000.00	5.0000	14.048	41.708	9.205	7.736	0.97160
2010.00	4.9751	13.920	41.540	9.141	7.655	0.97160
2020.00	4.9505	13.790	41.367	9.075	7.572	0.97160
2030.00	4.9261	13.687	41.188	9.005	7.499	0.97155
2040.00	4.9020	13.571	41.032	8.946	7.425	0.97155
2050.00	4.8780	13.452	40.871	8.885	7.350	0.97155
2060.00	4.8544	13.329	40.704	8.822	7.273	0.97155
2070.00	4.8309	13.232	40.532	8.755	7.205	0.97150
2080.00	4.8077	13.122	40.381	8.699	7.136	0.97150
2090.00	4.7847	13.009	40.225	8.640	7.066	0.97150
2100.00	4.7619	12.893	40.063	8.579	6.993	0.97150
2110.00	4.7393	12.801	39.895	8.514	6.929	0.97145
2120.00	4.7170	12.695	39.747	8.459	6.864	0.97145
2130.00	4.6948	12.584	39.590	8.400	6.795	0.97145
2140.00	4.6729	12.496	39.427	8.338	6.733	0.97140
2150.00	4.6512	12.394	39.282	8.284	6.671	0.97140
2160.00	4.6296	12.287	39.128	8.226	6.605	0.97140
2170.00	4.6083	12.201	38.967	8.165	6.546	0.97135



WN	WL	N	K	DN	DK	R
2180.00	4.5872	12.100	38.921	8.111	6.484	0.97135
2190.00	4.5662	12.018	38.664	8.052	6.428	0.97130
2200.00	4.5455	11.921	38.522	7.999	6.369	0.97130
2210.00	4.5249	11.842	38.370	7.942	6.315	0.97125
2220.00	4.5045	11.750	38.235	7.892	6.259	0.97125
2230.00	4.4843	11.652	38.089	7.839	6.200	0.97125
2240.00	4.4643	11.572	37.933	7.781	6.146	0.97120
2250.00	4.4444	11.501	37.792	7.728	6.097	0.97115
2260.00	4.4248	11.415	37.663	7.681	6.046	0.97115
2270.00	4.4053	11.322	37.524	7.630	5.991	0.97115
2280.00	4.3860	11.250	37.378	7.576	5.941	0.97110
2290.00	4.3668	11.162	37.246	7.528	5.890	0.97110
2300.00	4.3478	11.093	37.104	7.476	5.843	0.97105
2310.00	4.3290	11.008	36.975	7.429	5.793	0.97105
2320.00	4.3103	10.942	36.838	7.379	5.748	0.97100
2330.00	4.2918	10.862	36.715	7.335	5.701	0.97100
2340.00	4.2735	10.777	36.584	7.287	5.651	0.97100
2350.00	4.2553	10.711	36.447	7.238	5.607	0.97095
2360.00	4.2373	10.631	36.322	7.193	5.560	0.97095
2370.00	4.2194	10.569	36.190	7.145	5.518	0.97090
2380.00	4.2017	10.494	36.072	7.103	5.475	0.97090
2390.00	4.1841	10.414	35.945	7.058	5.429	0.97090
2400.00	4.1667	10.332	35.814	7.011	5.388	0.97085
2410.00	4.1494	10.277	35.695	6.968	5.345	0.97085
2420.00	4.1322	10.219	35.569	6.923	5.306	0.97080
2430.00	4.1152	10.149	35.457	6.884	5.266	0.97080
2440.00	4.0994	10.077	35.341	6.843	5.225	0.97080
2450.00	4.0816	10.002	35.220	6.800	5.182	0.97080
2460.00	4.0650	9.946	35.096	6.756	5.145	0.97075
2470.00	4.0486	9.879	34.987	6.718	5.107	0.97075
2480.00	4.0323	9.810	34.874	6.679	5.068	0.97075
2490.00	4.0161	9.741	34.761	6.639	5.029	0.97075
2500.00	4.0000	9.672	34.647	6.599	4.990	0.97075
2510.00	3.9841	9.603	34.533	6.560	4.951	0.97075
2520.00	3.9683	9.533	34.415	6.519	4.911	0.97075
2530.00	3.9526	9.480	34.296	6.477	4.877	0.97070
2540.00	3.9370	9.418	34.191	6.431	4.842	0.97070
2550.00	3.9216	9.354	34.083	6.403	4.806	0.97070
2560.00	3.9063	9.290	33.975	6.366	4.770	0.97070
2570.00	3.8911	9.226	33.866	6.329	4.735	0.97070
2580.00	3.8760	9.162	33.758	6.292	4.699	0.97070
2590.00	3.8610	9.099	33.650	6.255	4.664	0.97070
2600.00	3.8462	9.037	33.543	6.218	4.630	0.97070
2610.00	3.8314	8.975	33.436	6.181	4.596	0.97070
2620.00	3.8168	8.913	33.330	6.145	4.562	0.97070
2630.00	3.8023	8.852	33.223	6.109	4.528	0.97070
2640.00	3.7879	8.792	33.118	6.073	4.495	0.97070
2650.00	3.7736	8.732	33.013	6.038	4.462	0.97070
2660.00	3.7594	8.673	32.908	6.002	4.430	0.97070
2670.00	3.7453	8.614	32.804	5.967	4.398	0.97070

WN	WL	N	K	DN	DK	R
2680.00	3.7313	8.556	32.700	5.932	4.366	0.97070
2690.00	3.7175	8.498	32.597	5.898	4.334	0.97070
2700.00	3.7037	8.441	32.495	5.863	4.303	0.97070
2710.00	3.6900	8.384	32.393	5.829	4.272	0.97070
2720.00	3.6765	8.328	32.291	5.795	4.242	0.97070
2730.00	3.6630	8.272	32.190	5.761	4.212	0.97070
2740.00	3.6496	8.217	32.089	5.728	4.182	0.97070
2750.00	3.6364	8.162	31.989	5.695	4.153	0.97070
2760.00	3.6232	8.108	31.889	5.662	4.123	0.97070
2770.00	3.6101	8.054	31.790	5.629	4.094	0.97070
2780.00	3.5971	8.001	31.691	5.596	4.066	0.97070
2790.00	3.5842	7.948	31.593	5.564	4.038	0.97070
2800.00	3.5714	7.896	31.495	5.532	4.010	0.97070
2810.00	3.5587	7.844	31.398	5.500	3.982	0.97070
2820.00	3.5461	7.792	31.301	5.468	3.954	0.97070
2830.00	3.5336	7.741	31.204	5.437	3.927	0.97070
2840.00	3.5211	7.690	31.108	5.405	3.900	0.97070
2850.00	3.5088	7.639	31.011	5.374	3.873	0.97070
2860.00	3.4965	7.587	30.912	5.342	3.846	0.97070
2870.00	3.4843	7.550	30.812	5.309	3.822	0.97065
2880.00	3.4722	7.504	30.723	5.281	3.798	0.97065
2890.00	3.4602	7.457	30.633	5.252	3.773	0.97065
2900.00	3.4483	7.410	30.542	5.222	3.749	0.97065
2910.00	3.4364	7.364	30.451	5.193	3.724	0.97065
2920.00	3.4247	7.317	30.360	5.164	3.700	0.97065
2930.00	3.4130	7.271	30.270	5.135	3.676	0.97065
2940.00	3.4014	7.225	30.180	5.107	3.652	0.97065
2950.00	3.3898	7.180	30.091	5.078	3.628	0.97065
2960.00	3.3784	7.135	30.001	5.050	3.605	0.97065
2970.00	3.3670	7.091	29.913	5.022	3.581	0.97065
2980.00	3.3557	7.046	29.824	4.994	3.559	0.97065
2990.00	3.3445	7.003	29.737	4.966	3.536	0.97065
3000.00	3.3333	6.959	29.649	4.939	3.513	0.97065
3010.00	3.3223	6.916	29.562	4.912	3.491	0.97065
3020.00	3.3113	6.873	29.476	4.885	3.469	0.97065
3030.00	3.3003	6.831	29.390	4.858	3.447	0.97065
3040.00	3.2895	6.789	29.304	4.831	3.426	0.97065
3050.00	3.2787	6.747	29.219	4.804	3.404	0.97065
3060.00	3.2680	6.706	29.134	4.778	3.383	0.97065
3070.00	3.2573	6.665	29.050	4.752	3.362	0.97065
3080.00	3.2468	6.625	28.966	4.726	3.341	0.97065
3090.00	3.2362	6.585	28.882	4.700	3.321	0.97065
3100.00	3.2258	6.545	28.799	4.675	3.300	0.97065
3110.00	3.2154	6.505	28.716	4.649	3.280	0.97065
3120.00	3.2051	6.466	28.634	4.624	3.260	0.97065
3130.00	3.1949	6.427	28.552	4.599	3.241	0.97065
3140.00	3.1847	6.389	28.471	4.574	3.221	0.97065
3150.00	3.1746	6.351	28.390	4.550	3.202	0.97065
3160.00	3.1646	6.313	28.310	4.525	3.183	0.97065
3170.00	3.1546	6.276	28.230	4.501	3.164	0.97065

WN	WL	N	K	DN	DK	R
3180.00	3.1447	6.238	28.150	4.477	3.145	0.97055
3190.00	3.1348	6.202	28.071	4.453	3.127	0.97065
3200.00	3.1250	6.166	27.994	4.430	3.109	0.97065
3210.00	3.1153	6.131	27.919	4.407	3.091	0.97065
3220.00	3.1056	6.085	27.844	4.385	3.071	0.97070
3230.00	3.0960	6.048	27.762	4.360	3.052	0.97070
3240.00	3.0864	6.011	27.682	4.336	3.034	0.97070
3250.00	3.0769	5.976	27.603	4.313	3.016	0.97070
3260.00	3.0675	5.940	27.525	4.289	2.998	0.97070
3270.00	3.0581	5.905	27.448	4.266	2.981	0.97070
3280.00	3.0488	5.871	27.371	4.244	2.964	0.97070
3290.00	3.0395	5.836	27.294	4.221	2.947	0.97070
3300.00	3.0303	5.802	27.218	4.198	2.930	0.97070
3310.00	3.0211	5.768	27.142	4.176	2.913	0.97070
3320.00	3.0120	5.735	27.066	4.154	2.896	0.97070
3330.00	3.0030	5.702	26.991	4.132	2.880	0.97070
3340.00	2.9940	5.669	26.916	4.110	2.863	0.97070
3350.00	2.9851	5.636	26.842	4.088	2.847	0.97070
3360.00	2.9762	5.603	26.767	4.067	2.831	0.97070
3370.00	2.9674	5.571	26.693	4.045	2.815	0.97070
3380.00	2.9586	5.539	26.619	4.024	2.799	0.97070
3390.00	2.9499	5.507	26.546	4.003	2.784	0.97070
3400.00	2.9412	5.475	26.471	3.981	2.768	0.97070
3410.00	2.9326	5.442	26.395	3.959	2.752	0.97070
3420.00	2.9240	5.420	26.320	3.938	2.738	0.97065
3430.00	2.9155	5.390	26.251	3.918	2.724	0.97065
3440.00	2.9070	5.360	26.181	3.898	2.709	0.97065
3450.00	2.8986	5.330	26.110	3.878	2.694	0.97065
3460.00	2.8902	5.300	26.039	3.858	2.680	0.97065
3470.00	2.8818	5.269	25.965	3.837	2.664	0.97065
3480.00	2.8736	5.248	25.892	3.817	2.652	0.97060
3490.00	2.8653	5.220	25.826	3.798	2.638	0.97060
3500.00	2.8571	5.191	25.757	3.779	2.624	0.97060
3510.00	2.8490	5.161	25.686	3.759	2.610	0.97060
3520.00	2.8409	5.141	25.614	3.739	2.597	0.97055
3530.00	2.8329	5.114	25.550	3.721	2.584	0.97055
3540.00	2.8249	5.086	25.483	3.702	2.571	0.97055
3550.00	2.8169	5.057	25.413	3.683	2.557	0.97055
3560.00	2.8090	5.038	25.343	3.664	2.545	0.97050
3570.00	2.8011	5.011	25.280	3.646	2.533	0.97050
3580.00	2.7933	4.984	25.212	3.627	2.519	0.97050
3590.00	2.7855	4.965	25.144	3.609	2.508	0.97045
3600.00	2.7778	4.940	25.083	3.592	2.496	0.97045
3610.00	2.7701	4.914	25.019	3.575	2.483	0.97045
3620.00	2.7624	4.887	24.953	3.556	2.470	0.97045
3630.00	2.7548	4.869	24.886	3.539	2.459	0.97040
3640.00	2.7473	4.844	24.826	3.522	2.448	0.97040
3650.00	2.7397	4.819	24.763	3.505	2.436	0.97040
3660.00	2.7322	4.793	24.699	3.487	2.423	0.97040
3670.00	2.7248	4.776	24.634	3.470	2.413	0.97035

WN	WL	N	K	DN	DK	R
3680.00	2.7174	4.752	24.575	3.454	2.402	0.97035
3690.00	2.7100	4.728	24.514	3.438	2.390	0.97035
3700.00	2.7027	4.702	24.451	3.421	2.378	0.97035
3710.00	2.6954	4.686	24.388	3.404	2.368	0.97030
3720.00	2.6882	4.663	24.331	3.389	2.357	0.97030
3730.00	2.6810	4.640	24.272	3.373	2.346	0.97030
3740.00	2.6738	4.616	24.213	3.357	2.335	0.97030
3750.00	2.6667	4.593	24.153	3.341	2.324	0.97030
3760.00	2.6596	4.569	24.093	3.326	2.313	0.97030
3770.00	2.6525	4.545	24.032	3.309	2.302	0.97030
3780.00	2.6455	4.530	23.971	3.293	2.292	0.97025
3790.00	2.6385	4.508	23.916	3.279	2.282	0.97025
3800.00	2.6316	4.486	23.859	3.264	2.272	0.97025
3810.00	2.6247	4.464	23.802	3.249	2.262	0.97025
3820.00	2.6176	4.442	23.745	3.234	2.251	0.97025
3830.00	2.6110	4.420	23.688	3.219	2.241	0.97025
3840.00	2.6042	4.398	23.631	3.204	2.231	0.97025
3850.00	2.5974	4.376	23.575	3.189	2.221	0.97025
3860.00	2.5907	4.355	23.518	3.174	2.210	0.97025
3870.00	2.5840	4.333	23.462	3.160	2.200	0.97025
3880.00	2.5773	4.312	23.406	3.145	2.190	0.97025
3890.00	2.5707	4.290	23.350	3.131	2.181	0.97025
3900.00	2.5641	4.269	23.294	3.116	2.171	0.97025
3910.00	2.5575	4.248	23.238	3.102	2.161	0.97025
3920.00	2.5510	4.227	23.183	3.088	2.151	0.97025
3930.00	2.5445	4.207	23.128	3.073	2.142	0.97025
3940.00	2.5381	4.186	23.073	3.059	2.132	0.97025
3950.00	2.5316	4.165	23.018	3.045	2.123	0.97025
3960.00	2.5253	4.145	22.963	3.031	2.113	0.97025
3970.00	2.5189	4.125	22.909	3.017	2.104	0.97025
3980.00	2.5126	4.105	22.854	3.003	2.094	0.97025
3990.00	2.5063	4.084	22.799	2.989	2.085	0.97025
4000.00	2.5000	4.063	22.742	2.975	2.075	0.97025
4016.06	2.4900	4.040	22.658	2.954	2.063	0.97020
4032.26	2.4800	4.009	22.574	2.933	2.048	0.97020
4048.58	2.4700	3.978	22.490	2.912	2.034	0.97020
4065.04	2.4600	3.947	22.404	2.890	2.020	0.97020
4081.63	2.4500	3.916	22.319	2.869	2.006	0.97020
4098.36	2.4400	3.885	22.233	2.848	1.992	0.97020
4115.23	2.4300	3.854	22.148	2.827	1.978	0.97020
4132.23	2.4200	3.824	22.062	2.805	1.964	0.97020
4149.38	2.4100	3.793	21.975	2.784	1.950	0.97020
4166.67	2.4000	3.762	21.889	2.763	1.936	0.97020
4184.10	2.3900	3.732	21.803	2.742	1.922	0.97020
4201.68	2.3800	3.702	21.716	2.721	1.908	0.97020
4219.41	2.3700	3.671	21.629	2.700	1.894	0.97020
4237.29	2.3600	3.641	21.543	2.679	1.881	0.97020
4255.32	2.3500	3.611	21.455	2.658	1.867	0.97020
4273.50	2.3400	3.581	21.368	2.637	1.853	0.97020
4291.85	2.3300	3.551	21.281	2.616	1.840	0.97020

WN	WL	N	K	DN	DK	R
4310.34	2.3200	3.521	21.193	2.595	1.826	0.97020
4329.00	2.3100	3.491	21.106	2.574	1.813	0.97020
4347.83	2.3000	3.461	21.018	2.553	1.799	0.97020
4366.81	2.2900	3.431	20.929	2.532	1.786	0.97020
4385.96	2.2800	3.406	20.835	2.511	1.773	0.97015
4405.29	2.2700	3.378	20.752	2.491	1.760	0.97015
4424.78	2.2600	3.349	20.665	2.471	1.747	0.97015
4444.44	2.2500	3.320	20.578	2.451	1.735	0.97015
4464.29	2.2400	3.292	20.491	2.430	1.722	0.97015
4484.30	2.2300	3.263	20.403	2.410	1.709	0.97015
4504.50	2.2200	3.234	20.315	2.390	1.696	0.97015
4524.89	2.2100	3.205	20.227	2.370	1.683	0.97015
4545.45	2.2000	3.177	20.139	2.350	1.670	0.97015
4566.21	2.1900	3.148	20.050	2.330	1.658	0.97015
4587.16	2.1800	3.120	19.962	2.310	1.645	0.97015
4608.29	2.1700	3.092	19.873	2.290	1.633	0.97015
4629.63	2.1600	3.064	19.784	2.270	1.620	0.97015
4651.16	2.1500	3.036	19.696	2.250	1.608	0.97015
4672.90	2.1400	3.008	19.607	2.230	1.595	0.97015
4694.84	2.1300	2.980	19.517	2.210	1.583	0.97015
4716.98	2.1200	2.952	19.428	2.191	1.571	0.97015
4739.34	2.1100	2.924	19.339	2.171	1.558	0.97015
4761.90	2.1000	2.897	19.249	2.152	1.546	0.97015
4784.69	2.0900	2.869	19.160	2.132	1.534	0.97015
4807.69	2.0800	2.842	19.070	2.113	1.522	0.97015
4830.92	2.0700	2.815	18.980	2.093	1.510	0.97015
4854.37	2.0600	2.788	18.890	2.074	1.498	0.97015
4878.05	2.0500	2.761	18.800	2.055	1.486	0.97015
4901.96	2.0400	2.734	18.710	2.035	1.474	0.97015
4926.11	2.0300	2.707	18.620	2.016	1.463	0.97015
4950.50	2.0200	2.680	18.530	1.997	1.451	0.97015
4975.12	2.0100	2.654	18.439	1.978	1.439	0.97015
5000.00	2.0000	2.627	18.349	1.959	1.428	0.97015
5025.13	1.9900	2.601	18.258	1.940	1.416	0.97015
5050.51	1.9800	2.575	18.167	1.921	1.405	0.97015
5076.14	1.9700	2.548	18.076	1.902	1.393	0.97015
5102.04	1.9600	2.522	17.985	1.884	1.382	0.97015
5128.21	1.9500	2.496	17.894	1.865	1.370	0.97015
5154.64	1.9400	2.471	17.802	1.846	1.359	0.97015
5181.35	1.9300	2.445	17.711	1.828	1.348	0.97015
5208.33	1.9200	2.419	17.619	1.809	1.337	0.97015
5235.60	1.9100	2.394	17.528	1.791	1.325	0.97015
5263.16	1.9000	2.368	17.436	1.773	1.314	0.97015
5291.01	1.8900	2.343	17.344	1.754	1.303	0.97015
5319.15	1.8800	2.318	17.252	1.736	1.292	0.97015
5347.59	1.8700	2.293	17.159	1.718	1.281	0.97015
5376.34	1.8600	2.268	17.067	1.700	1.271	0.97015
5405.41	1.8500	2.243	16.974	1.682	1.260	0.97015
5434.78	1.8400	2.218	16.881	1.664	1.249	0.97015
5464.48	1.8300	2.193	16.788	1.646	1.238	0.97015

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.172	16.693	1.628	1.228	0.97010
5524.86	1.8100	2.148	16.602	1.611	1.217	0.97010
5555.56	1.8000	2.124	16.510	1.593	1.207	0.97010
5586.59	1.7900	2.100	16.417	1.575	1.196	0.97010
5617.98	1.7800	2.076	16.324	1.558	1.186	0.97010
5649.72	1.7700	2.052	16.231	1.541	1.176	0.97010
5681.82	1.7600	2.028	16.137	1.523	1.165	0.97010
5714.29	1.7500	2.004	16.044	1.506	1.155	0.97010
5747.13	1.7400	1.981	15.950	1.489	1.145	0.97010
5780.35	1.7300	1.957	15.856	1.471	1.134	0.97010
5813.95	1.7200	1.934	15.762	1.454	1.124	0.97010
5847.95	1.7100	1.910	15.668	1.437	1.114	0.97010
5882.35	1.7000	1.887	15.573	1.420	1.104	0.97010
5917.16	1.6900	1.864	15.478	1.403	1.094	0.97010
5952.38	1.6800	1.841	15.383	1.387	1.084	0.97010
5988.02	1.6700	1.818	15.288	1.370	1.074	0.97010
6024.10	1.6600	1.795	15.193	1.353	1.064	0.97010
6060.61	1.6500	1.773	15.097	1.336	1.054	0.97010
6097.56	1.6400	1.750	15.002	1.320	1.044	0.97010
6134.97	1.6300	1.727	14.905	1.303	1.035	0.97010
6172.84	1.6200	1.705	14.809	1.287	1.025	0.97010
6211.18	1.6100	1.683	14.712	1.270	1.015	0.97010
6250.00	1.6000	1.660	14.616	1.254	1.005	0.97010
6289.31	1.5900	1.638	14.518	1.237	0.996	0.97010
6329.11	1.5800	1.616	14.421	1.221	0.986	0.97010
6369.43	1.5700	1.588	14.323	1.204	0.976	0.97020
6410.26	1.5600	1.565	14.217	1.187	0.965	0.97020
6451.61	1.5500	1.550	14.116	1.171	0.957	0.97005
6493.51	1.5400	1.533	14.013	1.155	0.947	0.96995
6535.95	1.5300	1.520	13.916	1.140	0.939	0.96980
6578.95	1.5200	1.504	13.820	1.125	0.930	0.96970
6622.52	1.5100	1.483	13.723	1.109	0.921	0.96970
6666.67	1.5000	1.464	13.624	1.094	0.912	0.96965
6711.41	1.4900	1.442	13.523	1.078	0.903	0.96965
6756.76	1.4800	1.425	13.423	1.062	0.894	0.96955
6802.72	1.4700	1.408	13.320	1.047	0.885	0.96945
6849.32	1.4600	1.391	13.218	1.032	0.876	0.96935
6896.55	1.4500	1.375	13.117	1.017	0.867	0.96925
6944.44	1.4400	1.363	13.015	1.002	0.859	0.96905
6993.01	1.4300	1.348	12.915	0.987	0.851	0.96890
7042.25	1.4200	1.334	12.815	0.973	0.842	0.96875
7092.20	1.4100	1.320	12.716	0.959	0.834	0.96860
7142.86	1.4000	1.303	12.615	0.944	0.825	0.96850
7194.24	1.3900	1.291	12.513	0.930	0.817	0.96830
7246.38	1.3800	1.278	12.410	0.916	0.809	0.96810
7299.27	1.3700	1.265	12.310	0.902	0.801	0.96790
7352.94	1.3600	1.255	12.209	0.888	0.793	0.96765
7407.41	1.3500	1.244	12.110	0.875	0.785	0.96740
7462.69	1.3400	1.231	12.010	0.862	0.778	0.96720
7518.80	1.3300	1.219	11.911	0.848	0.770	0.96700

WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.206	11.812	0.835	0.762	0.96680
7633.59	1.3100	1.193	11.712	0.822	0.754	0.96660
7692.31	1.3000	1.178	11.611	0.809	0.746	0.96645
7751.94	1.2900	1.164	11.508	0.795	0.738	0.96625
7812.50	1.2800	1.150	11.403	0.782	0.730	0.96605
7874.02	1.2700	1.139	11.297	0.768	0.722	0.96575
7936.51	1.2600	1.130	11.191	0.755	0.714	0.96540
8000.00	1.2500	1.122	11.086	0.743	0.706	0.96500
8064.52	1.2400	1.114	10.982	0.730	0.699	0.96460
8130.08	1.2300	1.105	10.876	0.718	0.691	0.96420
8196.72	1.2200	1.098	10.769	0.705	0.683	0.96375
8264.46	1.2100	1.091	10.661	0.693	0.676	0.96325
8333.33	1.2000	1.091	10.553	0.681	0.669	0.96255
8403.36	1.1900	1.088	10.449	0.670	0.662	0.96190
8474.58	1.1800	1.087	10.346	0.658	0.655	0.96120
8547.01	1.1700	1.085	10.243	0.647	0.648	0.96055
8620.69	1.1600	1.083	10.141	0.637	0.641	0.95985
8695.65	1.1500	1.080	10.037	0.626	0.634	0.95915
8771.93	1.1400	1.075	9.933	0.615	0.627	0.95850
8849.56	1.1300	1.072	9.828	0.604	0.620	0.95775
8928.57	1.1200	1.070	9.722	0.593	0.613	0.95695
9009.01	1.1100	1.068	9.614	0.582	0.606	0.95610
9090.91	1.1000	1.068	9.505	0.571	0.599	0.95515
9174.31	1.0900	1.069	9.395	0.561	0.592	0.95410
9259.26	1.0800	1.072	9.284	0.551	0.585	0.95290
9345.79	1.0700	1.077	9.174	0.541	0.578	0.95160
9433.96	1.0600	1.085	9.063	0.531	0.571	0.95015
9523.81	1.0500	1.093	8.951	0.521	0.565	0.94860
9615.38	1.0400	1.103	8.839	0.512	0.558	0.94690
9708.74	1.0300	1.117	8.726	0.503	0.551	0.94495
9803.92	1.0200	1.132	8.614	0.494	0.545	0.94285
9900.99	1.0100	1.151	8.500	0.486	0.539	0.94050
10000.00	1.0000	1.171	8.389	0.478	0.533	0.93800
10101.01	0.9900	1.194	8.277	0.471	0.526	0.93525
10204.08	0.9800	1.220	8.165	0.463	0.520	0.93225
10309.28	0.9700	1.250	8.051	0.456	0.514	0.92890
10416.67	0.9600	1.285	7.939	0.450	0.508	0.92515
10526.32	0.9500	1.326	7.826	0.444	0.502	0.92090
10638.30	0.9400	1.373	7.715	0.439	0.497	0.91620
10752.69	0.9300	1.427	7.607	0.435	0.492	0.91105
10869.57	0.9200	1.489	7.502	0.432	0.487	0.90525
10989.01	0.9100	1.560	7.405	0.430	0.482	0.89895
11111.11	0.9000	1.640	7.316	0.429	0.478	0.89225
11235.96	0.8900	1.727	7.238	0.429	0.475	0.88525
11363.64	0.8800	1.820	7.175	0.431	0.473	0.87825
11494.25	0.8700	1.918	7.131	0.434	0.472	0.87155
11627.91	0.8600	2.014	7.107	0.439	0.472	0.86565
11764.71	0.8500	2.104	7.107	0.444	0.474	0.86090
11904.76	0.8400	2.180	7.127	0.450	0.477	0.85770
12048.19	0.8300	2.234	7.166	0.457	0.482	0.85630

WN	WL	N	K	DN	DK	R
12195.12	0.8200	2.262	7.214	0.462	0.486	0.85655
12345.68	0.8100	2.262	7.264	0.466	0.490	0.85815
12500.00	0.8000	2.239	7.306	0.468	0.493	0.86060
12658.23	0.7900	2.198	7.339	0.468	0.495	0.86365
12820.51	0.7800	2.139	7.359	0.466	0.495	0.86715
12987.01	0.7700	2.068	7.365	0.462	0.494	0.87085
13157.89	0.7600	1.990	7.352	0.456	0.491	0.87440
13333.33	0.7500	1.910	7.324	0.449	0.487	0.87775
13513.51	0.7400	1.833	7.282	0.440	0.482	0.88065
13698.63	0.7300	1.759	7.232	0.431	0.476	0.88330
13888.89	0.7200	1.687	7.174	0.422	0.469	0.88570
14084.51	0.7100	1.618	7.111	0.412	0.463	0.88800
14285.71	0.7000	1.551	7.041	0.402	0.456	0.89005
14492.75	0.6900	1.488	6.966	0.391	0.448	0.89190
14705.88	0.6800	1.427	6.889	0.381	0.441	0.89365
14925.37	0.6700	1.370	6.808	0.371	0.434	0.89520
15151.52	0.6600	1.314	6.726	0.360	0.426	0.89675
15384.62	0.6500	1.258	6.641	0.350	0.419	0.89835
15625.00	0.6400	1.203	6.551	0.339	0.411	0.89990
15873.02	0.6300	1.153	6.457	0.329	0.403	0.90110
16129.03	0.6200	1.106	6.363	0.318	0.395	0.90210
16393.44	0.6100	1.062	6.268	0.308	0.388	0.90305
16666.67	0.6000	1.019	6.173	0.299	0.380	0.90395
16949.15	0.5900	0.977	6.075	0.289	0.373	0.90485
17241.38	0.5800	0.936	5.976	0.279	0.365	0.90570
17543.86	0.5700	0.899	5.876	0.269	0.358	0.90630
17857.14	0.5600	0.864	5.776	0.260	0.350	0.90680
18181.82	0.5500	0.830	5.676	0.251	0.343	0.90730
18518.52	0.5400	0.796	5.577	0.242	0.336	0.90785
18867.92	0.5300	0.762	5.476	0.234	0.329	0.90845
19230.77	0.5200	0.729	5.375	0.225	0.322	0.90905
19607.84	0.5100	0.698	5.272	0.216	0.314	0.90955
20000.00	0.5000	0.668	5.168	0.208	0.307	0.90995
20408.16	0.4900	0.639	5.064	0.200	0.300	0.91030
20833.33	0.4800	0.612	4.960	0.192	0.293	0.91065
21276.60	0.4700	0.584	4.856	0.184	0.287	0.91110
21739.13	0.4600	0.557	4.750	0.176	0.280	0.91145
22222.22	0.4500	0.531	4.643	0.168	0.273	0.91165
22727.27	0.4400	0.508	4.536	0.161	0.266	0.91170
23255.81	0.4300	0.485	4.429	0.154	0.259	0.91165
23809.52	0.4200	0.463	4.322	0.147	0.253	0.91160
24390.24	0.4100	0.442	4.216	0.140	0.246	0.91155
25000.00	0.4000	0.420	4.108	0.134	0.240	0.91165
25641.03	0.3900	0.400	4.001	0.127	0.233	0.91160
26315.79	0.3800	0.378	3.891	0.121	0.227	0.91180
27027.03	0.3700	0.359	3.779	0.114	0.220	0.91160
27777.78	0.3600	0.343	3.667	0.108	0.214	0.91065
28571.43	0.3500	0.329	3.557	0.103	0.207	0.90945
29411.76	0.3400	0.312	3.445	0.097	0.201	0.90885
30303.03	0.3300	0.301	3.336	0.092	0.195	0.90675



## ALUMINUM MIRROR

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WN	WL	N	K	DN	DK	R
31250.00	0.3200	0.287	3.224	0.087	0.189	0.90535
32258.06	0.3100	0.276	3.114	0.082	0.183	0.90320
33333.33	0.3000	0.263	3.003	0.078	0.177	0.90140
34482.76	0.2900	0.252	2.891	0.073	0.171	0.89925
35714.29	0.2800	0.242	2.778	0.069	0.165	0.89630
37037.04	0.2700	0.231	2.665	0.064	0.159	0.89350
38461.54	0.2600	0.223	2.549	0.060	0.153	0.88915
40000.00	0.2500	0.217	2.433	0.057	0.147	0.88370
41666.67	0.2400	0.215	2.315	0.054	0.141	0.87495
43478.26	0.2300	0.217	2.199	0.051	0.135	0.86355
45454.55	0.2200	0.223	2.084	0.049	0.129	0.84820
47619.05	0.2100	0.240	1.976	0.048	0.124	0.82485

### 5.3 Iron

The measured reflectance spectrum of iron and the spectral values of  $n$  and  $k$  are presented in Figs. 18-21. Tabulation of the reflectance, and of  $n$  and  $k$  are also presented in the following pages. No problems were encountered with the reflectance spectrum or with computations of  $n$  and  $k$ . We believe the values of  $n$  and  $k$  in the infrared supersede those previously published by Weaver et al.<sup>3</sup> and G.A. Bolotin et al.<sup>4</sup>

The first derivative of the infrared reflectance spectrum is presented in Fig. 22. The reflectance spectrum of iron (scale .8-1.0) is also presented in Fig. 22. We have not determined the sources of the valleys and peaks in the first derivative spectrum.

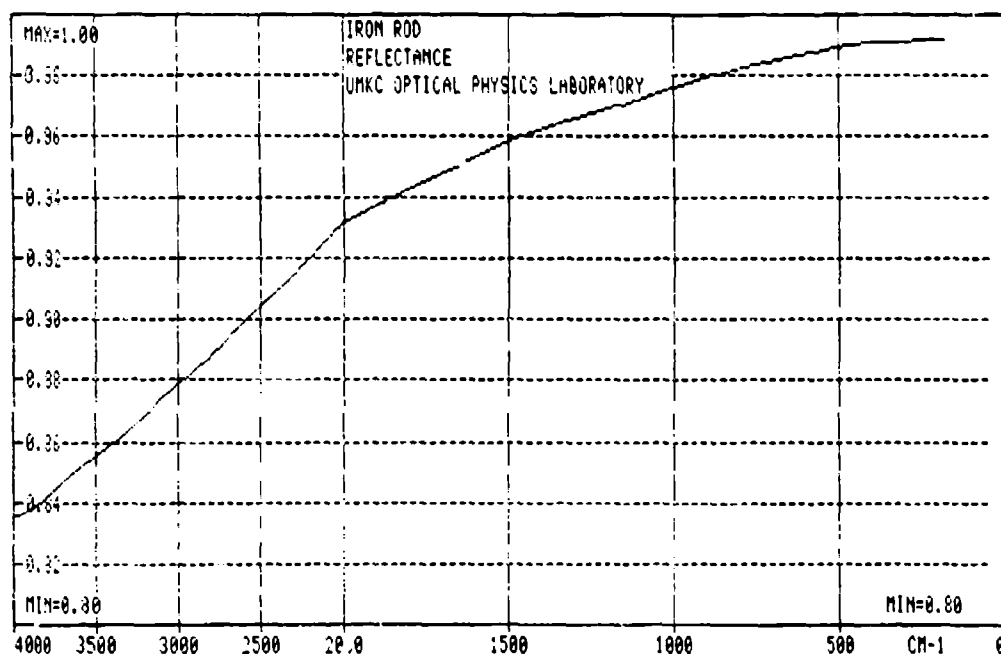


Figure 18. The infrared (4,000-180  $\text{cm}^{-1}$ ) reflectance spectrum of iron.

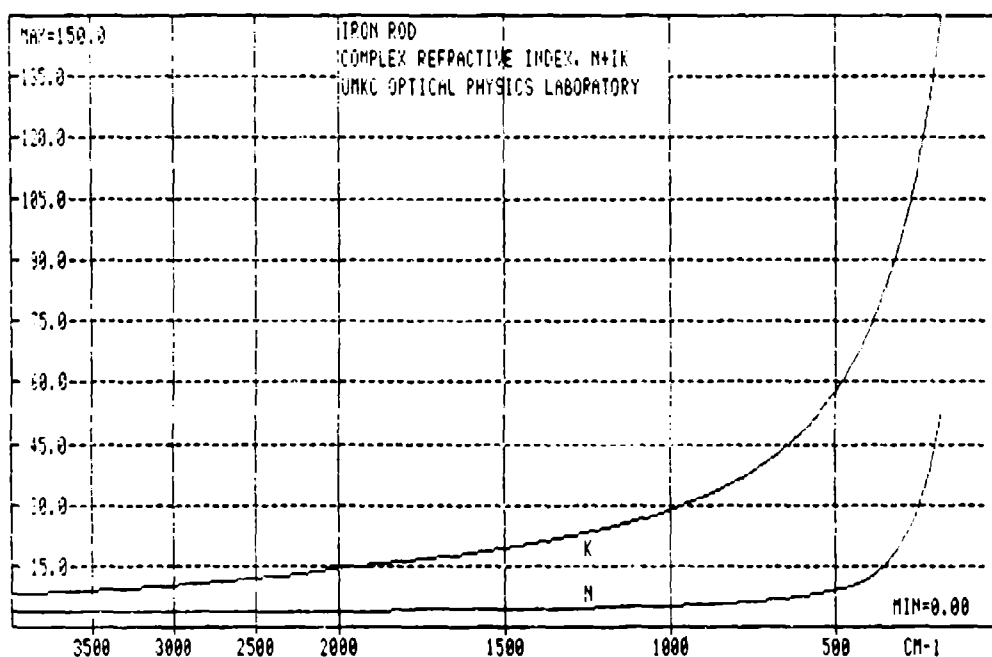


Figure 19. The infrared (4,000-180  $\text{cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for iron.

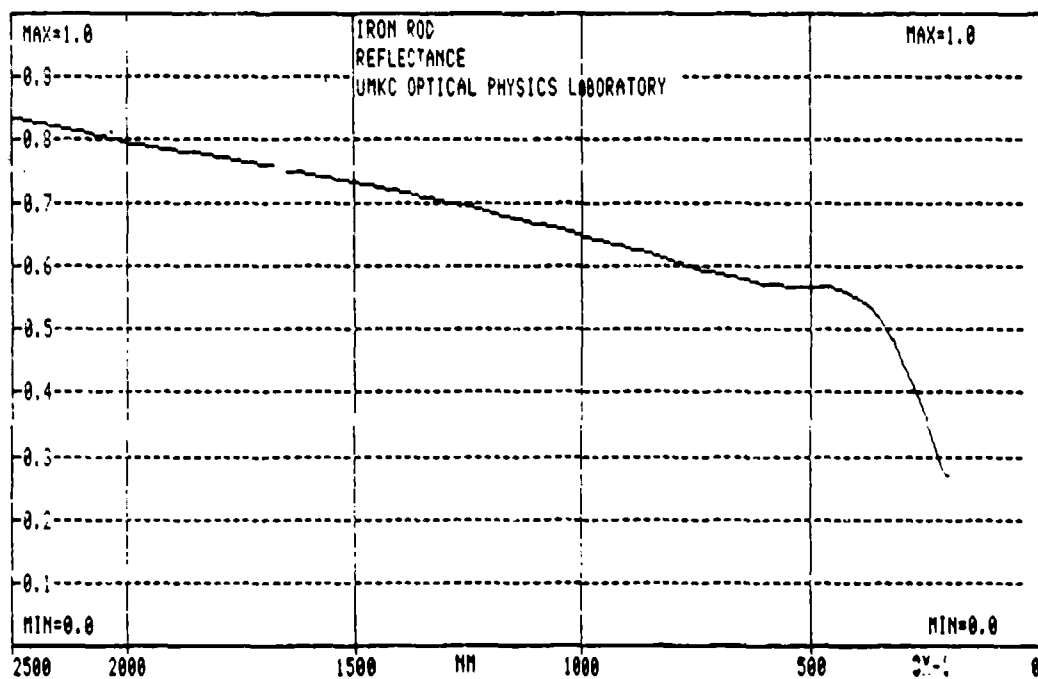


Figure 20. The uv-vis-nir (2,500-200 nm) reflectance spectrum of iron.

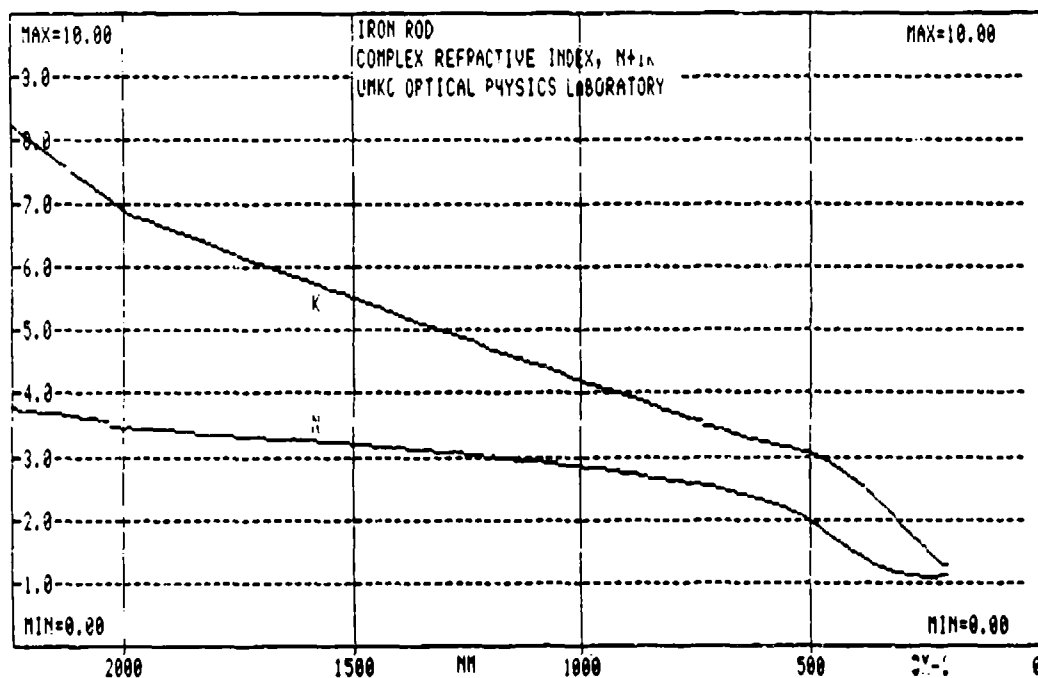


Figure 21. The uv-vis-nir (2,500-210 nm) complex refractive indices of iron.

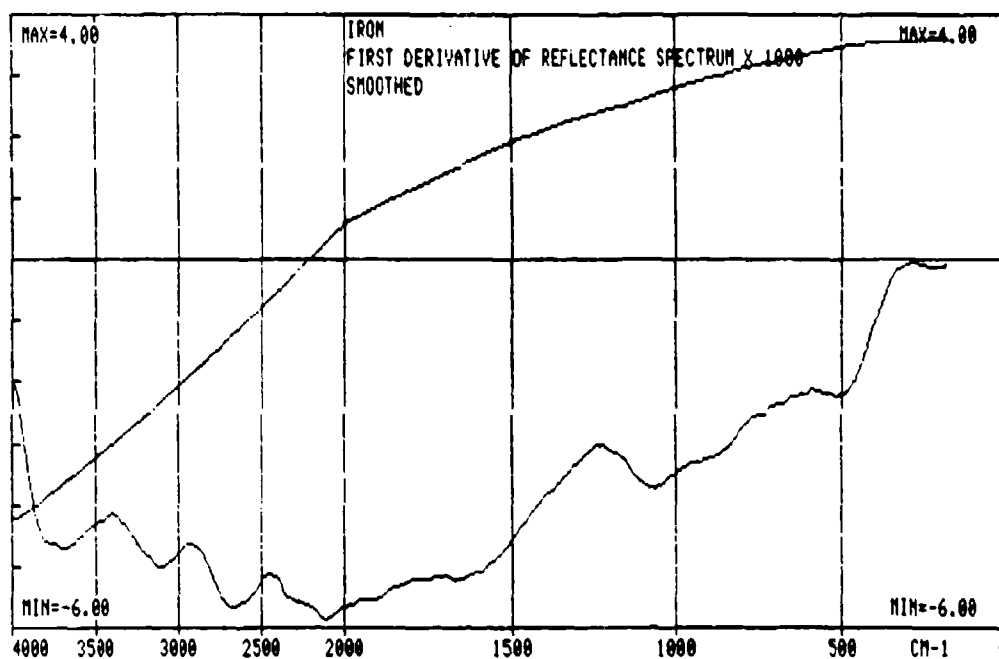


Figure 22. The first derivative of the infrared reflectance spectrum of iron.

WN	WL	N	K	DN	DK	R
180.00	55.5556	54.848	152.133	21.240	17.973	0.99170
190.00	52.6316	49.736	145.745	20.038	15.949	0.99170
200.00	50.0000	45.257	139.754	18.655	14.044	0.99170
210.00	47.6190	41.364	134.110	17.359	12.434	0.99169
220.00	45.4545	37.988	128.832	16.160	11.076	0.99167
230.00	43.4783	35.070	123.929	15.063	9.932	0.99163
240.00	41.6667	32.461	119.413	14.077	8.947	0.99161
250.00	40.0000	30.095	115.205	13.180	8.088	0.99160
260.00	38.4615	27.921	111.240	12.354	7.327	0.99160
270.00	37.0370	25.982	107.465	11.584	6.662	0.99159
280.00	35.7143	24.261	103.902	10.873	6.084	0.99157
290.00	34.4828	22.745	100.563	10.222	5.584	0.99153
300.00	33.3333	21.354	97.458	9.632	5.140	0.99151
310.00	32.2581	20.050	94.541	9.093	4.741	0.99151
320.00	31.2500	18.813	91.768	8.592	4.375	0.99152
330.00	30.3030	17.653	89.100	8.121	4.042	0.99153
340.00	29.4118	16.597	86.524	7.677	3.743	0.99154
350.00	28.5714	15.637	84.044	7.259	3.474	0.99153
360.00	27.7778	14.786	81.664	6.867	3.237	0.99151
370.00	27.0270	14.017	79.390	6.502	3.025	0.99147
380.00	26.3158	13.336	77.211	6.160	2.837	0.99141
390.00	25.6410	12.729	75.133	5.842	2.669	0.99133
400.00	25.0000	12.195	73.151	5.545	2.520	0.99123
410.00	24.3902	11.721	71.267	5.270	2.387	0.99111
420.00	23.8095	11.294	69.477	5.015	2.268	0.99098
430.00	23.2558	10.907	67.770	4.778	2.159	0.99084
440.00	22.7273	10.553	66.135	4.555	2.060	0.99069
450.00	22.2222	10.249	64.565	4.346	1.971	0.99052
460.00	21.7391	9.991	63.067	4.152	1.893	0.99031
470.00	21.2766	9.779	61.651	3.972	1.823	0.99008
480.00	20.8333	9.589	60.320	3.806	1.760	0.98984
490.00	20.4082	9.413	59.066	3.654	1.702	0.98960
500.00	20.0000	9.238	57.878	3.512	1.648	0.98937
510.00	19.6078	9.066	56.742	3.379	1.595	0.98915
520.00	19.2308	8.901	55.652	3.254	1.546	0.98893
530.00	18.8679	8.749	54.608	3.136	1.500	0.98870
540.00	18.5185	8.604	53.611	3.026	1.456	0.98847
550.00	18.1818	8.459	52.659	2.922	1.415	0.98826
560.00	17.8571	8.310	51.742	2.824	1.375	0.98805
570.00	17.5439	8.167	50.854	2.731	1.336	0.98784
580.00	17.2414	8.028	49.996	2.642	1.300	0.98764
590.00	16.9492	7.894	49.168	2.558	1.265	0.98743
600.00	16.6667	7.758	48.367	2.478	1.231	0.98724
610.00	16.3934	7.624	47.586	2.401	1.198	0.98704
620.00	16.1290	7.495	46.822	2.327	1.166	0.98684
630.00	15.8730	7.379	46.076	2.256	1.137	0.98663
640.00	15.6250	7.275	45.352	2.188	1.109	0.98639
650.00	15.3846	7.182	44.654	2.123	1.084	0.98615
660.00	15.1515	7.095	43.981	2.062	1.059	0.98590
670.00	14.9254	7.011	43.332	2.004	1.036	0.98565

WN	WL	N	K	DN	DK	R
680.00	14.7059	6.931	42.706	1.948	1.014	0.98540
690.00	14.4928	6.851	42.102	1.896	0.993	0.98516
700.00	14.2857	6.770	41.516	1.845	0.972	0.98492
710.00	14.0845	6.689	40.946	1.797	0.952	0.98468
720.00	13.8889	6.609	40.389	1.750	0.932	0.98445
730.00	13.6986	6.530	39.847	1.705	0.913	0.98422
740.00	13.5135	6.453	39.316	1.662	0.895	0.98398
750.00	13.3333	6.379	38.797	1.620	0.877	0.98374
760.00	13.1579	6.308	38.289	1.580	0.860	0.98350
770.00	12.9870	6.243	37.793	1.541	0.844	0.98324
780.00	12.8205	6.181	37.309	1.503	0.828	0.98298
790.00	12.6582	6.122	36.839	1.467	0.813	0.98272
800.00	12.5000	6.063	36.380	1.432	0.799	0.98246
810.00	12.3457	6.005	35.930	1.399	0.784	0.98219
820.00	12.1951	5.951	35.486	1.366	0.771	0.98191
830.00	12.0482	5.907	35.050	1.334	0.758	0.98161
840.00	11.9048	5.867	34.629	1.304	0.746	0.98129
850.00	11.7647	5.832	34.222	1.275	0.734	0.98097
860.00	11.6279	5.796	33.827	1.247	0.723	0.98065
870.00	11.4943	5.760	33.441	1.221	0.712	0.98033
880.00	11.3636	5.726	33.065	1.195	0.702	0.98001
890.00	11.2360	5.693	32.699	1.170	0.692	0.97969
900.00	11.1111	5.662	32.342	1.146	0.682	0.97936
910.00	10.9890	5.630	31.994	1.123	0.672	0.97904
920.00	10.8696	5.600	31.654	1.101	0.663	0.97871
930.00	10.7527	5.569	31.323	1.079	0.654	0.97839
940.00	10.6383	5.539	30.999	1.058	0.645	0.97807
950.00	10.5263	5.507	30.682	1.038	0.636	0.97775
960.00	10.4167	5.475	30.371	1.018	0.628	0.97743
970.00	10.3093	5.444	30.064	0.999	0.619	0.97711
980.00	10.2041	5.413	29.762	0.980	0.611	0.97679
990.00	10.1010	5.387	29.466	0.962	0.603	0.97644
1000.00	10.0000	5.362	29.175	0.945	0.595	0.97610
1010.00	9.9010	5.339	28.891	0.927	0.588	0.97574
1020.00	9.8039	5.318	28.613	0.911	0.581	0.97538
1030.00	9.7087	5.298	28.342	0.895	0.574	0.97502
1040.00	9.6154	5.279	28.078	0.880	0.567	0.97466
1050.00	9.5238	5.259	27.820	0.865	0.561	0.97429
1060.00	9.4340	5.239	27.566	0.850	0.555	0.97393
1070.00	9.3458	5.221	27.317	0.836	0.548	0.97356
1080.00	9.2593	5.205	27.075	0.822	0.542	0.97319
1090.00	9.1743	5.188	26.838	0.809	0.536	0.97282
1100.00	9.0909	5.171	26.608	0.796	0.531	0.97245
1110.00	9.0090	5.155	26.382	0.784	0.525	0.97208
1120.00	8.9286	5.138	26.161	0.772	0.520	0.97172
1130.00	8.8496	5.122	25.946	0.760	0.514	0.97136
1140.00	8.7719	5.104	25.738	0.749	0.509	0.97101
1150.00	8.6957	5.084	25.534	0.738	0.504	0.97067
1160.00	8.6207	5.061	25.334	0.728	0.499	0.97036
1170.00	8.5470	5.036	25.136	0.717	0.493	0.97005

## IRON

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WN	WL	N	K	DN	DK	R
1180.00	8.4746	5.009	24.941	0.707	0.488	0.96975
1190.00	8.4034	4.982	24.746	0.697	0.483	0.96945
1200.00	8.3333	4.955	24.554	0.687	0.478	0.96915
1210.00	8.2645	4.928	24.365	0.677	0.473	0.96885
1220.00	8.1967	4.901	24.177	0.668	0.467	0.96855
1230.00	8.1301	4.873	23.992	0.658	0.462	0.96826
1240.00	8.0645	4.844	23.809	0.649	0.457	0.96797
1250.00	8.0000	4.814	23.626	0.640	0.452	0.96768
1260.00	7.9365	4.786	23.442	0.631	0.448	0.96737
1270.00	7.8740	4.761	23.259	0.622	0.443	0.96704
1280.00	7.8125	4.739	23.080	0.613	0.438	0.96670
1290.00	7.7519	4.718	22.904	0.605	0.434	0.96635
1300.00	7.6923	4.698	22.733	0.597	0.429	0.96601
1310.00	7.6336	4.676	22.565	0.589	0.425	0.96567
1320.00	7.5758	4.652	22.399	0.581	0.421	0.96535
1330.00	7.5188	4.628	22.232	0.573	0.417	0.96502
1340.00	7.4627	4.606	22.065	0.565	0.412	0.96467
1350.00	7.4074	4.587	21.901	0.558	0.408	0.96432
1360.00	7.3529	4.569	21.739	0.550	0.404	0.96394
1370.00	7.2993	4.552	21.580	0.543	0.401	0.96356
1380.00	7.2464	4.534	21.423	0.536	0.397	0.96319
1390.00	7.1942	4.517	21.269	0.529	0.393	0.96281
1400.00	7.1429	4.500	21.115	0.522	0.389	0.96242
1410.00	7.0922	4.484	20.963	0.515	0.386	0.96204
1420.00	7.0423	4.469	20.813	0.509	0.382	0.96164
1430.00	6.9930	4.455	20.664	0.502	0.379	0.96123
1440.00	6.9444	4.442	20.518	0.496	0.375	0.96082
1450.00	6.8966	4.430	20.375	0.490	0.372	0.96040
1460.00	6.8493	4.417	20.233	0.484	0.369	0.95998
1470.00	6.8027	4.405	20.092	0.478	0.366	0.95956
1480.00	6.7568	4.393	19.952	0.472	0.363	0.95912
1490.00	6.7114	4.383	19.814	0.466	0.359	0.95867
1500.00	6.6667	4.374	19.678	0.461	0.356	0.95822
1510.00	6.6225	4.366	19.544	0.455	0.354	0.95776
1520.00	6.5789	4.358	19.412	0.450	0.351	0.95729
1530.00	6.5359	4.351	19.281	0.445	0.348	0.95681
1540.00	6.4935	4.344	19.153	0.439	0.345	0.95633
1550.00	6.4516	4.338	19.025	0.434	0.342	0.95584
1560.00	6.4103	4.334	18.899	0.429	0.340	0.95533
1570.00	6.3694	4.331	18.776	0.425	0.337	0.95482
1580.00	6.3291	4.327	18.656	0.420	0.335	0.95431
1590.00	6.2893	4.324	18.538	0.415	0.332	0.95379
1600.00	6.2500	4.321	18.422	0.411	0.330	0.95328
1610.00	6.2112	4.319	18.307	0.407	0.328	0.95277
1620.00	6.1728	4.316	18.195	0.402	0.325	0.95226
1630.00	6.1350	4.313	18.085	0.398	0.323	0.95175
1640.00	6.0977	4.309	17.976	0.394	0.321	0.95125
1650.00	6.0609	4.305	17.868	0.390	0.318	0.95074
1660.00	6.0246	4.301	17.761	0.386	0.316	0.95023
1670.00	5.9888	4.299	17.655	0.382	0.314	0.94971



WN	WL	N	K	DN	DK	R
1680.00	5.9524	4.296	17.551	0.378	0.312	0.94919
1690.00	5.9172	4.294	17.449	0.375	0.310	0.94867
1700.00	5.8824	4.291	17.348	0.371	0.308	0.94815
1710.00	5.8480	4.288	17.248	0.367	0.306	0.94763
1720.00	5.8140	4.286	17.149	0.364	0.304	0.94709
1730.00	5.7803	4.285	17.052	0.360	0.302	0.94656
1740.00	5.7471	4.284	16.957	0.357	0.300	0.94602
1750.00	5.7143	4.283	16.865	0.354	0.298	0.94549
1760.00	5.6818	4.280	16.774	0.351	0.296	0.94498
1770.00	5.6497	4.276	16.684	0.347	0.294	0.94449
1780.00	5.6180	4.271	16.594	0.344	0.292	0.94399
1790.00	5.5866	4.266	16.504	0.341	0.290	0.94350
1800.00	5.5556	4.261	16.414	0.336	0.288	0.94299
1810.00	5.5249	4.258	16.325	0.335	0.286	0.94246
1820.00	5.4945	4.255	16.236	0.332	0.285	0.94192
1830.00	5.4645	4.254	16.149	0.329	0.283	0.94137
1840.00	5.4348	4.252	16.064	0.326	0.281	0.94083
1850.00	5.4054	4.249	15.980	0.323	0.279	0.94030
1860.00	5.3763	4.247	15.896	0.320	0.278	0.93976
1870.00	5.3476	4.244	15.814	0.318	0.276	0.93922
1880.00	5.3191	4.242	15.731	0.315	0.274	0.93867
1890.00	5.2910	4.240	15.650	0.312	0.273	0.93812
1900.00	5.2632	4.239	15.570	0.310	0.271	0.93756
1910.00	5.2356	4.238	15.492	0.307	0.269	0.93701
1920.00	5.2083	4.237	15.414	0.305	0.268	0.93645
1930.00	5.1813	4.235	15.338	0.302	0.266	0.93590
1940.00	5.1546	4.234	15.262	0.300	0.265	0.93535
1950.00	5.1282	4.232	15.187	0.297	0.263	0.93480
1960.00	5.1020	4.230	15.113	0.295	0.262	0.93425
1970.00	5.0761	4.229	15.039	0.293	0.260	0.93369
1980.00	5.0505	4.227	14.966	0.290	0.259	0.93313
1990.00	5.0251	4.226	14.894	0.288	0.257	0.93257
2000.00	5.0000	4.225	14.823	0.286	0.256	0.93201
2010.00	4.9751	4.224	14.752	0.284	0.254	0.93144
2020.00	4.9505	4.222	14.682	0.282	0.253	0.93088
2030.00	4.9261	4.221	14.613	0.279	0.252	0.93031
2040.00	4.9020	4.221	14.544	0.277	0.250	0.92973
2050.00	4.8780	4.221	14.476	0.275	0.249	0.92915
2060.00	4.8544	4.221	14.409	0.273	0.247	0.92857
2070.00	4.8309	4.221	14.343	0.271	0.246	0.92798
2080.00	4.8077	4.221	14.278	0.269	0.245	0.92740
2090.00	4.7847	4.221	14.213	0.267	0.244	0.92682
2100.00	4.7619	4.221	14.150	0.265	0.242	0.92624
2110.00	4.7393	4.221	14.087	0.264	0.241	0.92566
2120.00	4.7170	4.221	14.025	0.262	0.240	0.92508
2130.00	4.6948	4.221	13.964	0.260	0.238	0.92450
2140.00	4.6729	4.221	13.903	0.258	0.237	0.92392
2150.00	4.6512	4.222	13.843	0.256	0.236	0.92333
2160.00	4.6296	4.222	13.784	0.255	0.235	0.92275
2170.00	4.6083	4.223	13.726	0.253	0.234	0.92217

## IRON

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WN	WL	N	K	DN	DK	R
2180.00	4.5872	4.224	13.669	0.251	0.233	0.92159
2190.00	4.5662	4.224	13.613	0.250	0.231	0.92102
2200.00	4.5455	4.224	13.557	0.248	0.230	0.92046
2210.00	4.5249	4.224	13.503	0.247	0.229	0.91990
2220.00	4.5045	4.223	13.449	0.245	0.228	0.91936
2230.00	4.4843	4.221	13.395	0.244	0.227	0.91882
2240.00	4.4643	4.219	13.341	0.242	0.226	0.91828
2250.00	4.4444	4.217	13.288	0.240	0.225	0.91773
2260.00	4.4248	4.216	13.234	0.239	0.224	0.91717
2270.00	4.4053	4.216	13.181	0.237	0.223	0.91660
2280.00	4.3860	4.215	13.129	0.236	0.222	0.91603
2290.00	4.3668	4.215	13.077	0.235	0.221	0.91547
2300.00	4.3478	4.214	13.026	0.233	0.219	0.91491
2310.00	4.3290	4.214	12.977	0.232	0.218	0.91435
2320.00	4.3103	4.213	12.927	0.230	0.217	0.91380
2330.00	4.2918	4.212	12.878	0.229	0.216	0.91325
2340.00	4.2735	4.211	12.830	0.228	0.215	0.91270
2350.00	4.2553	4.210	12.782	0.226	0.214	0.91215
2360.00	4.2373	4.209	12.734	0.225	0.213	0.91161
2370.00	4.2194	4.208	12.688	0.224	0.213	0.91107
2380.00	4.2017	4.207	12.642	0.223	0.212	0.91054
2390.00	4.1841	4.205	12.597	0.221	0.211	0.91002
2400.00	4.1667	4.203	12.552	0.220	0.210	0.90951
2410.00	4.1494	4.200	12.507	0.219	0.209	0.90899
2420.00	4.1322	4.197	12.462	0.218	0.208	0.90848
2430.00	4.1152	4.195	12.418	0.216	0.207	0.90797
2440.00	4.0984	4.192	12.374	0.215	0.206	0.90746
2450.00	4.0816	4.189	12.330	0.214	0.205	0.90695
2460.00	4.0650	4.185	12.287	0.213	0.204	0.90645
2470.00	4.0486	4.181	12.243	0.212	0.203	0.90595
2480.00	4.0323	4.178	12.200	0.211	0.202	0.90544
2490.00	4.0161	4.174	12.156	0.209	0.201	0.90493
2500.00	4.0000	4.171	12.111	0.208	0.200	0.90439
2510.00	3.9841	4.168	12.068	0.207	0.199	0.90385
2520.00	3.9683	4.166	12.024	0.206	0.198	0.90330
2530.00	3.9526	4.164	11.982	0.205	0.198	0.90276
2540.00	3.9370	4.162	11.940	0.204	0.197	0.90222
2550.00	3.9216	4.159	11.898	0.203	0.196	0.90168
2560.00	3.9063	4.157	11.857	0.202	0.195	0.90114
2570.00	3.8911	4.155	11.815	0.201	0.194	0.90060
2580.00	3.8760	4.153	11.774	0.200	0.193	0.90005
2590.00	3.8610	4.151	11.733	0.198	0.192	0.89950
2600.00	3.8462	4.149	11.692	0.197	0.192	0.89894
2610.00	3.8314	4.148	11.652	0.196	0.191	0.89838
2620.00	3.8166	4.147	11.612	0.195	0.190	0.89781
2630.00	3.8023	4.146	11.572	0.194	0.189	0.89724
2640.00	3.7879	4.145	11.533	0.193	0.188	0.89667
2650.00	3.7736	4.145	11.495	0.192	0.187	0.89611
2660.00	3.7594	4.144	11.457	0.192	0.187	0.89555
2670.00	3.7453	4.143	11.420	0.191	0.186	0.89499

WN	WL	N	K	DN	DK	R
2680.00	3.7313	4.142	11.382	0.190	0.185	0.89443
2690.00	3.7175	4.142	11.345	0.189	0.184	0.89387
2700.00	3.7037	4.142	11.309	0.188	0.184	0.89331
2710.00	3.6900	4.141	11.272	0.187	0.183	0.89274
2720.00	3.6765	4.141	11.237	0.186	0.182	0.89218
2730.00	3.6630	4.141	11.201	0.185	0.181	0.89162
2740.00	3.6496	4.142	11.167	0.184	0.181	0.89106
2750.00	3.6364	4.142	11.134	0.184	0.180	0.89052
2760.00	3.6232	4.141	11.101	0.183	0.179	0.88999
2770.00	3.6101	4.141	11.068	0.182	0.179	0.88947
2780.00	3.5971	4.140	11.036	0.181	0.178	0.88896
2790.00	3.5842	4.139	11.004	0.180	0.177	0.88845
2800.00	3.5714	4.137	10.973	0.180	0.177	0.88795
2810.00	3.5587	4.135	10.941	0.179	0.176	0.88745
2820.00	3.5461	4.134	10.910	0.178	0.175	0.88695
2830.00	3.5336	4.132	10.879	0.177	0.175	0.88646
2840.00	3.5211	4.131	10.849	0.177	0.174	0.88597
2850.00	3.5088	4.128	10.819	0.176	0.174	0.88551
2860.00	3.4965	4.125	10.789	0.175	0.173	0.88504
2870.00	3.4843	4.122	10.759	0.174	0.172	0.88458
2880.00	3.4722	4.119	10.729	0.174	0.172	0.88412
2890.00	3.4602	4.116	10.699	0.173	0.171	0.88366
2900.00	3.4483	4.113	10.670	0.172	0.170	0.88319
2910.00	3.4364	4.109	10.640	0.172	0.170	0.88273
2920.00	3.4247	4.106	10.610	0.171	0.169	0.88227
2930.00	3.4130	4.102	10.581	0.170	0.168	0.88180
2940.00	3.4014	4.099	10.551	0.169	0.168	0.88133
2950.00	3.3898	4.096	10.522	0.169	0.167	0.88086
2960.00	3.3784	4.092	10.492	0.168	0.167	0.88039
2970.00	3.3670	4.089	10.463	0.167	0.166	0.87992
2980.00	3.3557	4.086	10.435	0.167	0.165	0.87945
2990.00	3.3445	4.082	10.406	0.166	0.165	0.87898
3000.00	3.3333	4.079	10.377	0.165	0.164	0.87852
3010.00	3.3223	4.075	10.349	0.165	0.163	0.87805
3020.00	3.3113	4.071	10.320	0.164	0.163	0.87758
3030.00	3.3003	4.068	10.291	0.163	0.162	0.87709
3040.00	3.2895	4.065	10.262	0.163	0.162	0.87660
3050.00	3.2787	4.062	10.233	0.162	0.161	0.87610
3060.00	3.2680	4.059	10.205	0.161	0.160	0.87560
3070.00	3.2573	4.057	10.177	0.161	0.160	0.87510
3080.00	3.2468	4.054	10.149	0.160	0.159	0.87459
3090.00	3.2362	4.052	10.121	0.159	0.159	0.87409
3100.00	3.2258	4.051	10.094	0.159	0.158	0.87358
3110.00	3.2154	4.048	10.067	0.158	0.157	0.87309
3120.00	3.2051	4.046	10.040	0.158	0.157	0.87259
3130.00	3.1949	4.044	10.014	0.157	0.156	0.87211
3140.00	3.1847	4.042	9.988	0.156	0.156	0.87162
3150.00	3.1746	4.040	9.962	0.156	0.155	0.87113
3160.00	3.1646	4.038	9.936	0.155	0.155	0.87064
3170.00	3.1546	4.036	9.910	0.155	0.154	0.87015

WN	WL	N	K	DN	DK	R
3180.00	3.1447	4.034	9.865	0.154	0.154	0.86966
3190.00	3.1348	4.033	9.860	0.153	0.153	0.86917
3200.00	3.1250	4.031	9.836	0.153	0.153	0.86871
3210.00	3.1153	4.028	9.812	0.152	0.152	0.86825
3220.00	3.1056	4.026	9.789	0.152	0.152	0.86780
3230.00	3.0960	4.023	9.765	0.151	0.151	0.86735
3240.00	3.0864	4.020	9.741	0.151	0.151	0.86689
3250.00	3.0769	4.018	9.717	0.150	0.150	0.86643
3260.00	3.0675	4.015	9.693	0.150	0.150	0.86597
3270.00	3.0581	4.013	9.670	0.149	0.149	0.86551
3280.00	3.0488	4.011	9.647	0.149	0.149	0.86505
3290.00	3.0395	4.008	9.624	0.148	0.148	0.86461
3300.00	3.0303	4.006	9.602	0.148	0.148	0.86417
3310.00	3.0211	4.003	9.580	0.147	0.147	0.86374
3320.00	3.0120	4.000	9.558	0.147	0.147	0.86332
3330.00	3.0030	3.996	9.536	0.146	0.146	0.86291
3340.00	2.9940	3.993	9.514	0.146	0.146	0.86250
3350.00	2.9851	3.989	9.493	0.145	0.145	0.86209
3360.00	2.9762	3.985	9.471	0.145	0.145	0.86168
3370.00	2.9674	3.981	9.448	0.144	0.144	0.86126
3380.00	2.9586	3.977	9.426	0.144	0.144	0.86084
3390.00	2.9499	3.973	9.405	0.143	0.143	0.86042
3400.00	2.9412	3.970	9.383	0.143	0.143	0.86001
3410.00	2.9326	3.965	9.362	0.142	0.143	0.85959
3420.00	2.9240	3.961	9.340	0.142	0.142	0.85918
3430.00	2.9155	3.958	9.318	0.141	0.142	0.85875
3440.00	2.9070	3.954	9.296	0.141	0.141	0.85832
3450.00	2.8986	3.950	9.275	0.140	0.141	0.85791
3460.00	2.8902	3.946	9.254	0.140	0.140	0.85749
3470.00	2.8818	3.942	9.232	0.140	0.140	0.85708
3480.00	2.8736	3.938	9.211	0.139	0.139	0.85665
3490.00	2.8653	3.934	9.189	0.139	0.139	0.85622
3500.00	2.8571	3.930	9.167	0.138	0.138	0.85578
3510.00	2.8490	3.926	9.146	0.138	0.138	0.85534
3520.00	2.8409	3.923	9.125	0.137	0.137	0.85491
3530.00	2.8329	3.919	9.104	0.137	0.137	0.85447
3540.00	2.8249	3.916	9.083	0.136	0.137	0.85403
3550.00	2.8169	3.912	9.062	0.136	0.136	0.85360
3560.00	2.8090	3.908	9.041	0.135	0.136	0.85317
3570.00	2.8011	3.904	9.020	0.135	0.135	0.85273
3580.00	2.7933	3.901	8.999	0.135	0.135	0.85229
3590.00	2.7855	3.897	8.978	0.134	0.134	0.85184
3600.00	2.7778	3.894	8.957	0.134	0.134	0.85138
3610.00	2.7701	3.891	8.936	0.133	0.133	0.85092
3620.00	2.7624	3.888	8.915	0.133	0.133	0.85046
3630.00	2.7548	3.885	8.895	0.132	0.133	0.84999
3640.00	2.7473	3.882	8.874	0.132	0.132	0.84953
3650.00	2.7397	3.880	8.854	0.131	0.132	0.84906
3660.00	2.7322	3.877	8.834	0.131	0.131	0.84859
3670.00	2.7248	3.875	8.814	0.131	0.131	0.84812

WN	WL	N	K	DN	DK	R
3680.00	2.7174	3.873	8.794	0.130	0.130	0.84765
3690.00	2.7100	3.870	8.774	0.130	0.130	0.84718
3700.00	2.7027	3.868	8.754	0.129	0.130	0.84671
3710.00	2.6954	3.866	8.735	0.129	0.129	0.84624
3720.00	2.6882	3.865	8.716	0.129	0.129	0.84577
3730.00	2.6810	3.863	8.697	0.128	0.128	0.84531
3740.00	2.6738	3.861	8.679	0.128	0.128	0.84485
3750.00	2.6667	3.859	8.660	0.127	0.128	0.84440
3760.00	2.6596	3.857	8.642	0.127	0.127	0.84395
3770.00	2.6525	3.855	8.624	0.127	0.127	0.84350
3780.00	2.6455	3.853	8.606	0.126	0.127	0.84305
3790.00	2.6385	3.851	8.588	0.126	0.126	0.84260
3800.00	2.6316	3.850	8.570	0.126	0.126	0.84215
3810.00	2.6247	3.848	8.553	0.125	0.125	0.84170
3820.00	2.6178	3.846	8.535	0.125	0.125	0.84125
3830.00	2.6110	3.845	8.518	0.125	0.125	0.84080
3840.00	2.6042	3.844	8.502	0.124	0.124	0.84036
3850.00	2.5974	3.843	8.485	0.124	0.124	0.83992
3860.00	2.5907	3.842	8.470	0.124	0.124	0.83951
3870.00	2.5840	3.840	8.455	0.123	0.123	0.83911
3880.00	2.5773	3.839	8.440	0.123	0.123	0.83872
3890.00	2.5707	3.837	8.426	0.123	0.123	0.83836
3900.00	2.5641	3.835	8.412	0.122	0.123	0.83801
3910.00	2.5575	3.832	8.398	0.122	0.122	0.83769
3920.00	2.5510	3.829	8.385	0.122	0.122	0.83739
3930.00	2.5445	3.825	8.372	0.122	0.122	0.83710
3940.00	2.5381	3.821	8.358	0.121	0.121	0.83682
3950.00	2.5316	3.816	8.346	0.121	0.121	0.83656
3960.00	2.5253	3.811	8.333	0.121	0.121	0.83632
3970.00	2.5189	3.805	8.320	0.121	0.121	0.83611
3980.00	2.5126	3.797	8.307	0.120	0.120	0.83592
3990.00	2.5063	3.789	8.294	0.120	0.120	0.83575
4016.06	2.4900	3.763	8.247	0.119	0.119	0.83503
4032.26	2.4800	3.752	8.216	0.118	0.118	0.83438
4048.58	2.4700	3.744	8.183	0.118	0.118	0.83361
4065.04	2.4600	3.741	8.149	0.117	0.117	0.83263
4081.63	2.4500	3.741	8.120	0.116	0.116	0.83177
4098.36	2.4400	3.738	8.095	0.116	0.116	0.83106
4115.23	2.4300	3.730	8.071	0.115	0.115	0.83053
4132.23	2.4200	3.723	8.042	0.115	0.115	0.82979
4149.38	2.4100	3.720	8.014	0.114	0.114	0.82900
4166.67	2.4000	3.715	7.991	0.114	0.114	0.82840
4184.10	2.3900	3.705	7.966	0.113	0.113	0.82789
4201.68	2.3800	3.696	7.936	0.113	0.113	0.82717
4219.41	2.3700	3.691	7.903	0.112	0.112	0.82622
4237.29	2.3600	3.689	7.877	0.112	0.111	0.82545
4255.32	2.3500	3.680	7.849	0.111	0.111	0.82478
4273.50	2.3400	3.674	7.820	0.111	0.110	0.82398
4291.85	2.3300	3.671	7.790	0.110	0.110	0.82309
4310.35	2.3200	3.665	7.763	0.109	0.109	0.82231

WN	WL	N	K	DN	DK	R
4329.00	2.3100	3.662	7.732	0.109	0.108	0.82135
4347.83	2.3000	3.660	7.705	0.103	0.108	0.82052
4366.81	2.2900	3.656	7.677	0.108	0.107	0.81965
4385.96	2.2800	3.654	7.652	0.107	0.107	0.81885
4405.29	2.2700	3.647	7.626	0.107	0.106	0.81816
4424.78	2.2600	3.644	7.599	0.106	0.106	0.81729
4444.44	2.2500	3.640	7.573	0.106	0.105	0.81651
4464.29	2.2400	3.632	7.548	0.105	0.105	0.81583
4484.30	2.2300	3.626	7.519	0.105	0.104	0.81498
4504.50	2.2200	3.624	7.491	0.104	0.104	0.81404
4524.89	2.2100	3.621	7.466	0.104	0.103	0.81321
4545.45	2.2000	3.616	7.440	0.103	0.102	0.81245
4566.21	2.1900	3.611	7.415	0.103	0.102	0.81166
4587.16	2.1800	3.606	7.390	0.102	0.101	0.81090
4608.29	2.1700	3.598	7.366	0.102	0.101	0.81023
4629.63	2.1600	3.589	7.338	0.101	0.100	0.80947
4651.16	2.1500	3.583	7.309	0.101	0.100	0.80855
4672.90	2.1400	3.578	7.281	0.100	0.099	0.80766
4694.84	2.1300	3.572	7.254	0.100	0.099	0.80679
4716.98	2.1200	3.569	7.227	0.099	0.098	0.80586
4739.34	2.1100	3.563	7.199	0.099	0.098	0.80498
4761.90	2.1000	3.559	7.175	0.098	0.097	0.80417
4784.69	2.0900	3.550	7.151	0.098	0.097	0.80348
4807.69	2.0800	3.542	7.120	0.097	0.096	0.80252
4830.92	2.0700	3.538	7.094	0.097	0.096	0.80158
4854.37	2.0600	3.531	7.068	0.096	0.095	0.80080
4878.05	2.0500	3.522	7.042	0.096	0.094	0.80003
4901.96	2.0400	3.512	7.012	0.095	0.094	0.79913
4926.11	2.0300	3.507	6.981	0.095	0.093	0.79802
4950.50	2.0200	3.500	6.956	0.094	0.093	0.79721
4975.12	2.0100	3.483	6.927	0.094	0.092	0.79656
5000.00	2.0000	3.483	6.879	0.093	0.091	0.79456
5025.13	1.9900	3.494	6.855	0.093	0.091	0.79321
5050.50	1.9800	3.487	6.831	0.092	0.090	0.79238
5076.14	1.9700	3.484	6.806	0.092	0.090	0.79144
5102.04	1.9600	3.478	6.782	0.091	0.089	0.79057
5128.20	1.9500	3.470	6.755	0.091	0.089	0.78969
5154.64	1.9400	3.463	6.728	0.090	0.088	0.78872
5181.35	1.9300	3.456	6.699	0.090	0.088	0.78769
5208.33	1.9200	3.449	6.667	0.089	0.087	0.78649
5235.60	1.9100	3.450	6.636	0.089	0.086	0.78508
5263.16	1.9000	3.447	6.612	0.088	0.086	0.78410
5291.00	1.8900	3.442	6.586	0.088	0.085	0.78307
5319.15	1.8800	3.438	6.561	0.087	0.085	0.78207
5347.59	1.8700	3.431	6.534	0.087	0.084	0.78106
5376.34	1.8600	3.428	6.511	0.087	0.084	0.78012
5405.40	1.8500	3.414	6.486	0.086	0.084	0.77939
5434.78	1.8400	3.406	6.454	0.086	0.083	0.77818
5464.48	1.8300	3.402	6.424	0.085	0.082	0.77690
5494.50	1.8200	3.397	6.396	0.085	0.082	0.77575

WN	WL	N	K	DN	DK	R
5524.86	1.8100	3.392	6.370	0.084	0.081	0.77465
5555.56	1.8000	3.382	6.342	0.084	0.081	0.77366
5586.59	1.7900	3.376	6.311	0.083	0.080	0.77236
5617.98	1.7800	3.370	6.281	0.083	0.080	0.77104
5649.72	1.7700	3.367	6.251	0.082	0.079	0.76972
5681.82	1.7600	3.363	6.224	0.082	0.078	0.76850
5714.29	1.7500	3.356	6.196	0.081	0.078	0.76733
5747.13	1.7400	3.351	6.167	0.081	0.077	0.76601
5780.35	1.7300	3.347	6.136	0.080	0.077	0.76462
5813.95	1.7200	3.343	6.109	0.080	0.076	0.76333
5847.95	1.7100	3.338	6.080	0.079	0.076	0.76202
5882.35	1.7000	3.335	6.052	0.079	0.075	0.76066
5917.16	1.6900	3.329	6.027	0.078	0.075	0.75951
5952.38	1.6800	3.326	5.996	0.078	0.074	0.75799
5988.02	1.6700	3.323	5.970	0.077	0.074	0.75675
6024.10	1.6600	3.318	5.941	0.077	0.073	0.75533
6060.61	1.6500	3.315	5.915	0.077	0.073	0.75400
6097.56	1.6400	3.311	5.889	0.076	0.072	0.75279
6134.97	1.6300	3.307	5.863	0.076	0.072	0.75147
6172.84	1.6200	3.301	5.837	0.075	0.071	0.75022
6211.18	1.6100	3.296	5.809	0.075	0.071	0.74885
6250.00	1.6000	3.294	5.784	0.074	0.070	0.74751
6289.31	1.5900	3.286	5.759	0.074	0.070	0.74638
6329.11	1.5800	3.281	5.733	0.074	0.069	0.74505
6369.43	1.5700	3.275	5.707	0.073	0.069	0.74378
6410.26	1.5600	3.270	5.683	0.073	0.068	0.74261
6451.61	1.5500	3.260	5.657	0.072	0.068	0.74146
6493.51	1.5400	3.253	5.627	0.072	0.067	0.73992
6535.95	1.5300	3.251	5.600	0.071	0.067	0.73840
6578.95	1.5200	3.242	5.578	0.071	0.066	0.73738
6622.52	1.5100	3.234	5.549	0.071	0.066	0.73598
6666.67	1.5000	3.229	5.522	0.070	0.065	0.73448
6711.41	1.4900	3.221	5.496	0.070	0.065	0.73317
6756.76	1.4800	3.212	5.469	0.069	0.064	0.73185
6802.72	1.4700	3.205	5.438	0.069	0.064	0.73021
6849.31	1.4600	3.201	5.410	0.068	0.063	0.72860
6896.55	1.4500	3.194	5.385	0.068	0.063	0.72728
6944.44	1.4400	3.186	5.355	0.068	0.062	0.72568
6993.01	1.4300	3.181	5.327	0.067	0.062	0.72405
7042.25	1.4200	3.176	5.300	0.067	0.061	0.72248
7092.20	1.4100	3.170	5.273	0.066	0.061	0.72096
7142.86	1.4000	3.162	5.246	0.066	0.060	0.71947
7194.25	1.3900	3.156	5.217	0.065	0.060	0.71780
7246.38	1.3800	3.151	5.188	0.065	0.059	0.71603
7299.27	1.3700	3.148	5.159	0.065	0.058	0.71424
7352.94	1.3600	3.145	5.133	0.064	0.058	0.71255
7407.41	1.3500	3.141	5.109	0.064	0.058	0.71111
7462.69	1.3400	3.135	5.086	0.063	0.057	0.70972
7518.90	1.3300	3.125	5.061	0.063	0.057	0.70839
7575.76	1.3200	3.118	5.034	0.063	0.056	0.70674

WN	WL	N	K	DN	DK	R
7633.59	1.3100	3.114	5.008	0.062	0.056	0.70512
7692.31	1.3000	3.105	4.985	0.062	0.055	0.70377
7751.94	1.2900	3.096	4.957	0.061	0.055	0.70212
7812.50	1.2800	3.091	4.931	0.061	0.054	0.70042
7874.02	1.2700	3.083	4.908	0.061	0.054	0.69906
7936.51	1.2600	3.071	4.880	0.060	0.053	0.69751
8000.00	1.2500	3.064	4.852	0.060	0.053	0.69571
8064.52	1.2400	3.056	4.827	0.060	0.053	0.69418
8130.08	1.2300	3.046	4.800	0.059	0.052	0.69247
8196.72	1.2200	3.036	4.773	0.059	0.052	0.69089
8264.46	1.2100	3.018	4.743	0.058	0.051	0.68926
8333.33	1.2000	3.022	4.699	0.058	0.050	0.68573
8403.36	1.1900	3.028	4.681	0.057	0.050	0.68413
8474.58	1.1800	3.016	4.656	0.057	0.049	0.68261
8547.01	1.1700	3.009	4.632	0.057	0.049	0.68102
8620.69	1.1600	3.002	4.605	0.056	0.049	0.67914
8695.65	1.1500	2.996	4.581	0.056	0.048	0.67740
8771.93	1.1400	2.987	4.556	0.055	0.048	0.67574
8849.56	1.1300	2.980	4.530	0.055	0.047	0.67392
8928.57	1.1200	2.972	4.503	0.055	0.047	0.67206
9009.01	1.1100	2.965	4.479	0.054	0.046	0.67030
9090.91	1.1000	2.957	4.454	0.054	0.046	0.66857
9174.31	1.0900	2.948	4.431	0.054	0.046	0.66697
9259.26	1.0800	2.937	4.405	0.053	0.045	0.66517
9345.79	1.0700	2.927	4.377	0.053	0.045	0.66326
9433.96	1.0600	2.918	4.350	0.053	0.044	0.66122
9523.81	1.0500	2.910	4.325	0.052	0.044	0.65941
9615.38	1.0400	2.899	4.299	0.052	0.043	0.65759
9708.74	1.0300	2.891	4.270	0.051	0.043	0.65534
9803.92	1.0200	2.883	4.243	0.051	0.042	0.65325
9900.99	1.0100	2.877	4.216	0.051	0.042	0.65108
10000.00	1.0000	2.868	4.192	0.050	0.042	0.64924
10101.01	0.9900	2.863	4.164	0.050	0.041	0.64689
10204.08	0.9800	2.857	4.145	0.050	0.041	0.64535
10309.28	0.9700	2.845	4.122	0.049	0.040	0.64376
10416.67	0.9600	2.836	4.099	0.049	0.040	0.64198
10526.32	0.9500	2.821	4.075	0.049	0.040	0.64029
10638.30	0.9400	2.812	4.047	0.048	0.039	0.63797
10752.69	0.9300	2.802	4.026	0.048	0.039	0.63633
10869.56	0.9200	2.790	4.001	0.048	0.039	0.63448
10989.01	0.9100	2.777	3.976	0.047	0.038	0.63256
11111.11	0.9000	2.766	3.948	0.047	0.038	0.63027
11235.95	0.8900	2.757	3.926	0.047	0.037	0.62848
11363.64	0.8800	2.742	3.903	0.046	0.037	0.62679
11494.25	0.8700	2.729	3.879	0.046	0.037	0.62491
11627.91	0.8600	2.713	3.852	0.046	0.036	0.62286
11764.71	0.8500	2.700	3.822	0.045	0.036	0.62037
11904.76	0.8400	2.689	3.795	0.045	0.035	0.61793
12048.19	0.8300	2.678	3.769	0.044	0.035	0.61577
12195.12	0.8200	2.666	3.741	0.044	0.035	0.61331



WN	WL	N	K	DN	DK	R
12345.68	0.8100	2.657	3.714	0.044	0.034	0.61076
12500.00	0.8000	2.649	3.693	0.043	0.034	0.60887
12658.23	0.7900	2.633	3.669	0.043	0.033	0.60691
12820.51	0.7800	2.623	3.642	0.043	0.033	0.60447
12987.01	0.7700	2.611	3.619	0.042	0.033	0.60245
13157.89	0.7600	2.597	3.595	0.042	0.032	0.60040
13333.33	0.7500	2.587	3.569	0.042	0.032	0.59793
13513.51	0.7400	2.577	3.549	0.041	0.032	0.59603
13698.63	0.7300	2.564	3.527	0.041	0.031	0.59412
13888.89	0.7200	2.549	3.507	0.041	0.031	0.59243
14084.51	0.7100	2.533	3.485	0.041	0.031	0.59069
14285.71	0.7000	2.519	3.463	0.040	0.031	0.58875
14492.75	0.6900	2.503	3.443	0.040	0.030	0.58707
14705.88	0.6800	2.486	3.423	0.040	0.030	0.58542
14925.37	0.6700	2.468	3.404	0.040	0.030	0.58397
15151.51	0.6600	2.448	3.383	0.039	0.030	0.58240
15384.62	0.6500	2.427	3.361	0.039	0.029	0.58082
15625.00	0.6400	2.408	3.336	0.039	0.029	0.57860
15873.02	0.6300	2.391	3.317	0.038	0.029	0.57700
16129.03	0.6200	2.370	3.297	0.038	0.029	0.57561
16393.44	0.6100	2.350	3.277	0.038	0.028	0.57414
16666.67	0.6000	2.328	3.259	0.038	0.028	0.57288
16949.15	0.5900	2.305	3.241	0.038	0.028	0.57183
17241.38	0.5800	2.281	3.223	0.037	0.028	0.57087
17543.86	0.5700	2.252	3.210	0.037	0.028	0.57070
17857.14	0.5600	2.219	3.190	0.037	0.028	0.57001
18181.82	0.5500	2.189	3.171	0.037	0.028	0.56916
18518.52	0.5400	2.156	3.153	0.036	0.028	0.56881
18867.92	0.5300	2.119	3.134	0.036	0.028	0.56861
19230.77	0.5200	2.080	3.113	0.036	0.028	0.56829
19607.84	0.5100	2.039	3.091	0.035	0.028	0.56811
20000.00	0.5000	1.996	3.067	0.035	0.027	0.56784
20408.16	0.4900	1.952	3.043	0.035	0.027	0.56770
20833.33	0.4800	1.903	3.019	0.034	0.027	0.56830
21276.60	0.4700	1.846	2.989	0.034	0.027	0.56874
21739.13	0.4600	1.790	2.949	0.033	0.027	0.56778
22222.22	0.4500	1.736	2.906	0.032	0.027	0.56639
22727.27	0.4400	1.682	2.858	0.032	0.026	0.56423
23255.81	0.4300	1.631	2.806	0.031	0.026	0.56133
23809.52	0.4200	1.583	2.753	0.030	0.026	0.55781
24390.24	0.4100	1.538	2.698	0.029	0.025	0.55387
25000.00	0.4000	1.492	2.644	0.029	0.025	0.55020
25641.03	0.3900	1.442	2.588	0.028	0.024	0.54675
26315.79	0.3800	1.390	2.526	0.027	0.024	0.54254
27027.03	0.3700	1.339	2.454	0.026	0.023	0.53633
27777.78	0.3600	1.296	2.375	0.025	0.022	0.52742
28571.43	0.3500	1.262	2.295	0.024	0.022	0.51622
29411.76	0.3400	1.234	2.217	0.023	0.021	0.50416
30303.03	0.3300	1.207	2.141	0.023	0.020	0.49200
31250.00	0.3200	1.179	2.061	0.022	0.019	0.47834

## IRON

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WN	WL	N	K	DN	DK	R
32258.06	0.3100	1.164	1.976	0.021	0.018	0.46049
33333.33	0.3000	1.155	1.902	0.020	0.017	0.44356
34482.76	0.2900	1.142	1.829	0.020	0.016	0.42701
35714.29	0.2800	1.134	1.757	0.019	0.016	0.40899
37037.04	0.2700	1.127	1.690	0.019	0.015	0.39204
38461.54	0.2600	1.117	1.621	0.018	0.014	0.37444
40000.00	0.2500	1.109	1.553	0.017	0.013	0.35602
41666.67	0.2400	1.104	1.480	0.017	0.012	0.33546
43478.26	0.2300	1.110	1.408	0.016	0.011	0.31287
45454.55	0.2200	1.125	1.347	0.016	0.010	0.29188
47619.05	0.2100	1.141	1.305	0.015	0.010	0.27659

#### 5.4 Hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>)

The measured reflectance and spectral values of  $n$  and  $k$  for hematite are presented in Figs. 23-32. Due to the problem with the polarizer and the PbS detector, only the reflectance spectrum for E+C was obtained for hematite in the uv-vis-nir. This spectrum was, however, joined to the E//C reflectance spectrum at 2,500 nm wavelength. Values of  $n$  and  $k$  for E//C in the uv-vis-nir should thus be used with caution because there are electronic bands some of which may not be active in the true E//C spectrum. However, Troger<sup>5</sup> gives the refractive index  $n$  of hematite for E//C at 589 nm (759nm) wavelength as  $n = 2.94$  (2.69) and we get a value at 590nm (760nm) of  $n = 2.93 \pm 0.04$  (2.61  $\pm$  0.03). For E+C at 589nm (759nm) Troger has  $n = 3.22$  (2.90) and at 590nm (760nm) we get  $n = 3.31 \pm 0.05$  (2.89  $\pm$  0.04).

The first derivative of the reflectance spectra for E//C and E+C are presented in Figs. 33 and 34, respectively. The minima and maxima in the first derivative spectra denote the spectral positions of the longitudinal and transverse optical modes.

Values of the measured reflectance and of  $n$  and  $k$  are also presented in tabular form in the following pages.

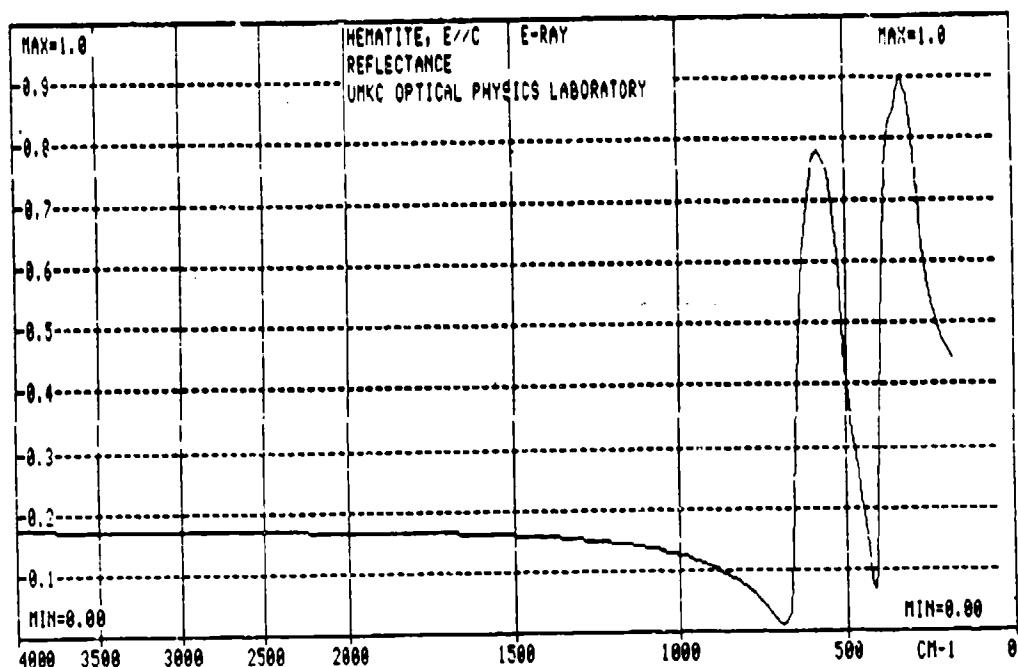


Figure 23. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) for E//C.

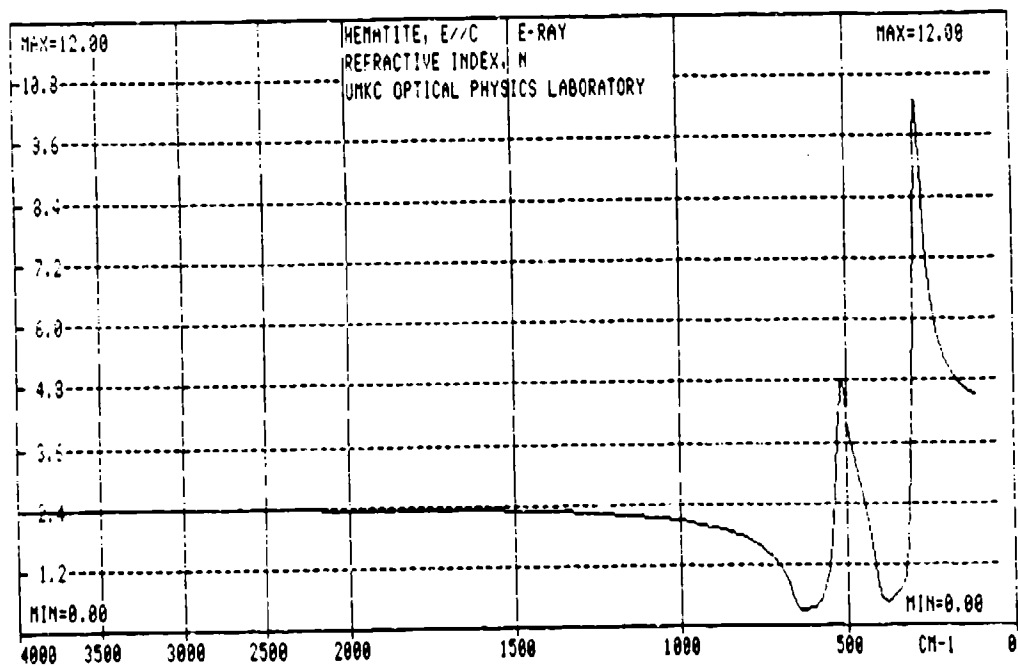


Figure 24. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) refractive index  $n$  of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ).

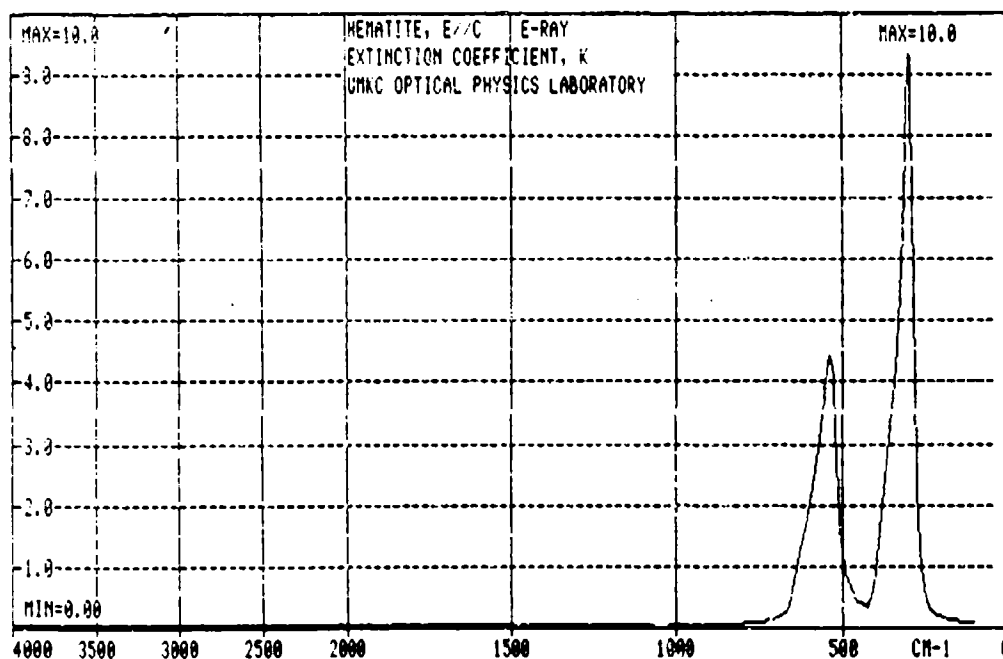


Figure 25. The infrared (4,000-180  $\text{cm}^{-1}$ ) extinction coefficient  $k$  of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) for E//C.

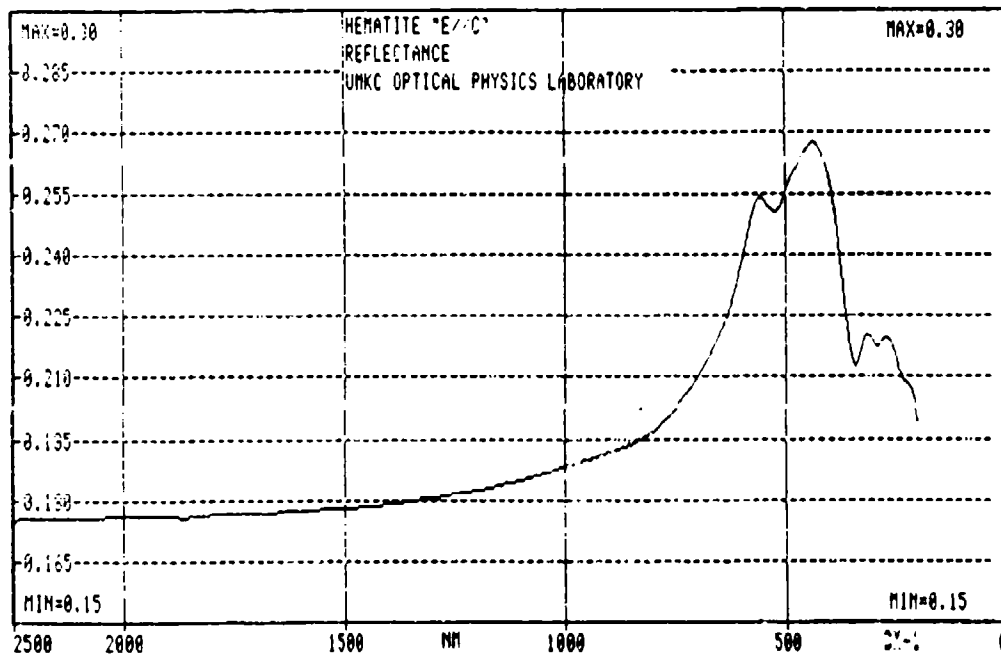


Figure 26. The uv-vis-nir (2,500-200 nm) reflectance spectrum of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) used for E//C.

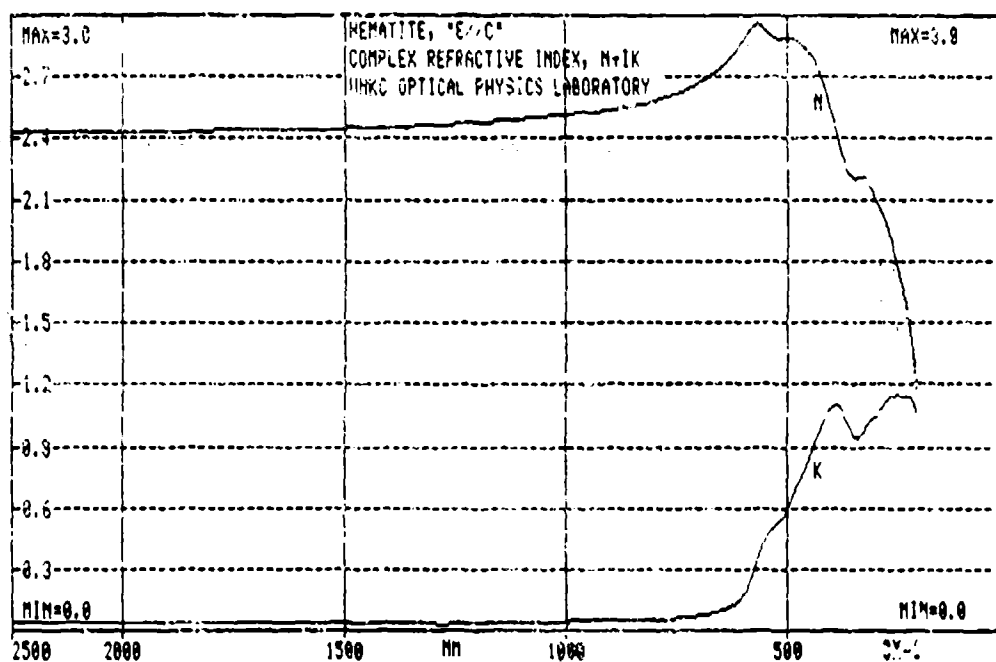


Figure 27. The uv-vis-nir (2,500-200 nm) refractive index of hematite ( $\alpha$ -Fe<sub>2</sub>O<sub>3</sub>) for E//C.

WN	WL	N	K	DN	DK	R
180.00	55.5556	4.916	0.140	0.118	0.014	0.44077
190.00	52.6316	5.023	0.157	0.124	0.016	0.44879
200.00	50.0000	5.148	0.175	0.130	0.018	0.45795
210.00	47.6190	5.292	0.193	0.138	0.021	0.46810
220.00	45.4545	5.507	0.218	0.150	0.024	0.48255
230.00	43.4783	5.727	0.258	0.163	0.029	0.49675
240.00	41.6667	6.062	0.294	0.183	0.034	0.51680
250.00	40.0000	6.523	0.406	0.214	0.048	0.54245
260.00	38.4615	7.110	0.636	0.257	0.079	0.57230
270.00	37.0370	7.971	1.037	0.328	0.137	0.61100
280.00	35.7143	9.429	2.080	0.473	0.300	0.66825
290.00	34.4828	10.555	5.441	0.648	0.752	0.74260
300.00	33.3333	7.255	9.384	0.668	0.823	0.81530
310.00	32.2581	3.189	8.711	0.638	0.641	0.86430
320.00	31.2500	1.513	6.919	0.390	0.446	0.88900
330.00	30.3030	0.869	5.566	0.240	0.337	0.89975
340.00	29.4118	0.706	4.534	0.179	0.270	0.88045
350.00	28.5714	0.668	3.052	0.146	0.228	0.84920
360.00	27.7778	0.572	3.359	0.119	0.199	0.83465
370.00	27.0270	0.489	2.824	0.093	0.168	0.80945
380.00	26.3158	0.459	2.315	0.076	0.140	0.75630
390.00	25.6410	0.516	1.817	0.068	0.112	0.63360
400.00	25.0000	0.599	1.275	0.060	0.080	0.43055
410.00	24.3902	0.955	0.743	0.051	0.029	0.12890
420.00	23.8095	1.459	0.483	0.028	0.022	0.07185
430.00	23.2558	1.862	0.364	0.022	0.024	0.10655
440.00	22.7273	2.220	0.378	0.027	0.027	0.15700
450.00	22.2222	2.513	0.441	0.035	0.033	0.20005
460.00	21.7391	2.787	0.429	0.041	0.034	0.23460
470.00	21.2766	3.064	0.559	0.053	0.045	0.27395
480.00	20.8333	3.336	0.700	0.065	0.057	0.31055
490.00	20.4082	3.648	0.857	0.081	0.072	0.34905
500.00	20.0000	3.969	1.089	0.100	0.093	0.38880
510.00	19.6078	4.568	1.535	0.142	0.139	0.45710
520.00	19.2308	4.909	2.831	0.210	0.214	0.54475
530.00	18.8679	3.901	4.194	0.241	0.190	0.62690
540.00	18.5185	2.575	4.452	0.277	0.244	0.68580
550.00	18.1818	1.561	4.088	0.221	0.237	0.73315
560.00	17.8571	0.989	3.531	0.159	0.207	0.76050
570.00	17.5439	0.715	3.059	0.120	0.180	0.76895
580.00	17.2414	0.526	2.661	0.092	0.159	0.77785
590.00	16.9492	0.420	2.317	0.073	0.141	0.77410
600.00	16.6667	0.360	1.990	0.059	0.124	0.75355
610.00	16.3934	0.343	1.721	0.052	0.111	0.71400
620.00	16.1290	0.329	1.477	0.046	0.100	0.66910
630.00	15.8730	0.315	1.242	0.040	0.090	0.61785
640.00	15.6250	0.319	0.980	0.035	0.079	0.53115
650.00	15.3846	0.379	0.690	0.032	0.068	0.36790
660.00	15.1515	0.550	0.419	0.030	0.052	0.15100
670.00	14.9254	0.787	0.262	0.025	0.027	0.03600

WN	WL	N	K	DN	DK	R
680.00	14.7059	0.959	0.256	0.022	0.009	0.01770
690.00	14.4928	1.064	0.204	0.014	0.005	0.01090
700.00	14.2857	1.182	0.171	0.009	0.009	0.01330
710.00	14.0845	1.270	0.152	0.008	0.009	0.01890
720.00	13.8889	1.345	0.138	0.007	0.009	0.02555
730.00	13.6986	1.407	0.123	0.007	0.008	0.03170
740.00	13.5135	1.467	0.107	0.007	0.007	0.03825
750.00	13.3333	1.522	0.095	0.008	0.006	0.04490
760.00	13.1579	1.576	0.084	0.008	0.006	0.05180
770.00	12.9870	1.622	0.079	0.009	0.005	0.05810
780.00	12.8205	1.665	0.076	0.010	0.005	0.06395
790.00	12.6582	1.700	0.074	0.010	0.005	0.06895
800.00	12.5000	1.731	0.067	0.011	0.005	0.07330
810.00	12.3457	1.765	0.060	0.011	0.004	0.07805
820.00	12.1951	1.797	0.058	0.012	0.004	0.08275
830.00	12.0482	1.827	0.059	0.012	0.004	0.08715
840.00	11.9048	1.848	0.061	0.013	0.004	0.09035
850.00	11.7647	1.868	0.058	0.013	0.004	0.09320
860.00	11.6279	1.890	0.054	0.013	0.004	0.09640
870.00	11.4943	1.913	0.051	0.014	0.004	0.09990
880.00	11.3636	1.934	0.054	0.014	0.004	0.10300
890.00	11.2360	1.948	0.055	0.014	0.004	0.10505
900.00	11.1111	1.960	0.049	0.015	0.004	0.10665
910.00	10.9890	1.978	0.047	0.015	0.003	0.10955
920.00	10.8696	1.994	0.046	0.015	0.003	0.11185
930.00	10.7527	2.006	0.045	0.016	0.003	0.11370
940.00	10.6383	2.018	0.044	0.016	0.003	0.11550
950.00	10.5263	2.030	0.037	0.016	0.003	0.11720
960.00	10.4167	2.048	0.034	0.016	0.002	0.11980
970.00	10.3093	2.064	0.034	0.017	0.003	0.12225
980.00	10.2041	2.077	0.035	0.017	0.003	0.12420
990.00	10.1010	2.085	0.038	0.017	0.003	0.12530
1000.00	10.0000	2.095	0.033	0.017	0.002	0.12685
1010.00	9.9010	2.108	0.035	0.018	0.003	0.12870
1020.00	9.8039	2.115	0.035	0.018	0.003	0.12975
1030.00	9.7087	2.124	0.030	0.018	0.002	0.13115
1040.00	9.6154	2.135	0.028	0.018	0.002	0.13280
1050.00	9.5238	2.146	0.030	0.018	0.002	0.13435
1060.00	9.4340	2.159	0.031	0.019	0.002	0.13630
1070.00	9.3458	2.167	0.033	0.019	0.003	0.13745
1080.00	9.2593	2.174	0.035	0.019	0.003	0.13850
1090.00	9.1743	2.181	0.036	0.019	0.003	0.13955
1100.00	9.0909	2.187	0.037	0.019	0.003	0.14045
1110.00	9.0090	2.193	0.037	0.019	0.003	0.14135
1120.00	8.9286	2.199	0.038	0.020	0.003	0.14230
1130.00	8.8496	2.205	0.038	0.020	0.003	0.14320
1140.00	8.7719	2.211	0.039	0.020	0.003	0.14400
1150.00	8.6957	2.216	0.039	0.020	0.003	0.14475
1160.00	8.6207	2.221	0.040	0.020	0.003	0.14550
1170.00	8.5470	2.226	0.040	0.020	0.003	0.14625



WN	WL	N	K	DN	DK	R
1180.00	8.4746	2.231	0.040	0.020	0.003	0.14695
1190.00	8.4034	2.236	0.040	0.020	0.003	0.14765
1200.00	8.3333	2.240	0.040	0.021	0.003	0.14830
1210.00	8.2645	2.244	0.040	0.021	0.003	0.14890
1220.00	8.1967	2.249	0.040	0.021	0.003	0.14955
1230.00	8.1301	2.253	0.040	0.021	0.003	0.15025
1240.00	8.0645	2.257	0.040	0.021	0.003	0.15085
1250.00	8.0000	2.262	0.040	0.021	0.003	0.15145
1260.00	7.9365	2.266	0.041	0.021	0.003	0.15205
1270.00	7.8740	2.269	0.041	0.021	0.003	0.15255
1280.00	7.8125	2.272	0.041	0.021	0.003	0.15305
1290.00	7.7519	2.276	0.041	0.021	0.003	0.15360
1300.00	7.6923	2.280	0.041	0.021	0.003	0.15410
1310.00	7.6336	2.283	0.041	0.022	0.003	0.15460
1320.00	7.5758	2.286	0.042	0.022	0.003	0.15510
1330.00	7.5188	2.290	0.042	0.022	0.003	0.15560
1340.00	7.4627	2.293	0.042	0.022	0.003	0.15605
1350.00	7.4074	2.296	0.042	0.022	0.003	0.15655
1360.00	7.3529	2.299	0.043	0.022	0.003	0.15700
1370.00	7.2993	2.302	0.044	0.022	0.003	0.15740
1380.00	7.2464	2.305	0.044	0.022	0.003	0.15780
1390.00	7.1942	2.307	0.045	0.022	0.003	0.15815
1400.00	7.1429	2.310	0.045	0.022	0.003	0.15850
1410.00	7.0922	2.312	0.045	0.022	0.003	0.15880
1420.00	7.0423	2.314	0.045	0.022	0.003	0.15910
1430.00	6.9930	2.316	0.045	0.022	0.003	0.15945
1440.00	6.9444	2.319	0.045	0.022	0.003	0.15985
1450.00	6.8966	2.322	0.046	0.022	0.004	0.16025
1460.00	6.8493	2.324	0.047	0.023	0.004	0.16055
1470.00	6.8027	2.326	0.047	0.023	0.004	0.16085
1480.00	6.7568	2.327	0.048	0.023	0.004	0.16110
1490.00	6.7114	2.329	0.048	0.023	0.004	0.16135
1500.00	6.6667	2.331	0.048	0.023	0.004	0.16165
1510.00	6.6225	2.333	0.049	0.023	0.004	0.16190
1520.00	6.5789	2.334	0.049	0.023	0.004	0.16210
1530.00	6.5359	2.336	0.050	0.023	0.004	0.16235
1540.00	6.4935	2.337	0.050	0.023	0.004	0.16255
1550.00	6.4516	2.338	0.050	0.023	0.004	0.16270
1560.00	6.4103	2.339	0.051	0.023	0.004	0.16285
1570.00	6.3694	2.341	0.051	0.023	0.004	0.16305
1580.00	6.3291	2.342	0.051	0.023	0.004	0.16320
1590.00	6.2893	2.343	0.050	0.023	0.004	0.16340
1600.00	6.2500	2.344	0.051	0.023	0.004	0.16355
1610.00	6.2112	2.345	0.050	0.023	0.004	0.16370
1620.00	6.1728	2.347	0.050	0.023	0.004	0.16390
1630.00	6.1350	2.348	0.050	0.023	0.004	0.16405
1640.00	6.0976	2.350	0.050	0.023	0.004	0.16430
1650.00	6.0606	2.351	0.050	0.023	0.004	0.16450
1660.00	6.0241	2.352	0.050	0.023	0.004	0.16470
1670.00	5.9880	2.354	0.050	0.023	0.004	0.16490

WN	WL	N	K	DN	DK	R
1680.00	5.9524	2.355	0.050	0.023	0.004	0.16505
1690.00	5.9172	2.356	0.050	0.023	0.004	0.16525
1700.00	5.8824	2.357	0.050	0.023	0.004	0.16545
1710.00	5.8480	2.358	0.050	0.023	0.004	0.16560
1720.00	5.8140	2.360	0.050	0.023	0.004	0.16580
1730.00	5.7803	2.361	0.051	0.023	0.004	0.16590
1740.00	5.7471	2.362	0.051	0.023	0.004	0.16605
1750.00	5.7143	2.362	0.051	0.023	0.004	0.16615
1760.00	5.6818	2.363	0.050	0.023	0.004	0.16630
1770.00	5.6497	2.365	0.051	0.024	0.004	0.16650
1780.00	5.6180	2.366	0.051	0.024	0.004	0.16665
1790.00	5.5866	2.367	0.051	0.024	0.004	0.16680
1800.00	5.5556	2.368	0.051	0.024	0.004	0.16700
1810.00	5.5249	2.369	0.052	0.024	0.004	0.16715
1820.00	5.4945	2.370	0.052	0.024	0.004	0.16730
1830.00	5.4645	2.371	0.053	0.024	0.004	0.16735
1840.00	5.4348	2.371	0.053	0.024	0.004	0.16740
1850.00	5.4054	2.372	0.053	0.024	0.004	0.16750
1860.00	5.3763	2.372	0.053	0.024	0.004	0.16760
1870.00	5.3476	2.373	0.053	0.024	0.004	0.16775
1880.00	5.3191	2.374	0.053	0.024	0.004	0.16785
1890.00	5.2910	2.375	0.053	0.024	0.004	0.16795
1900.00	5.2632	2.376	0.053	0.024	0.004	0.16810
1910.00	5.2356	2.377	0.053	0.024	0.004	0.16825
1920.00	5.2082	2.377	0.054	0.024	0.004	0.16830
1930.00	5.1813	2.377	0.054	0.024	0.004	0.16835
1940.00	5.1546	2.378	0.055	0.024	0.004	0.16840
1950.00	5.1282	2.378	0.055	0.024	0.004	0.16845
1960.00	5.1020	2.379	0.055	0.024	0.004	0.16855
1970.00	5.0761	2.379	0.055	0.024	0.004	0.16860
1980.00	5.0505	2.379	0.055	0.024	0.004	0.16865
1990.00	5.0251	2.380	0.056	0.024	0.004	0.16870
2000.00	5.0000	2.380	0.056	0.024	0.004	0.16870
2010.00	4.9751	2.380	0.056	0.024	0.004	0.16870
2020.00	4.9505	2.380	0.055	0.024	0.004	0.16870
2030.00	4.9261	2.380	0.055	0.024	0.004	0.16880
2040.00	4.9020	2.381	0.055	0.024	0.004	0.16890
2050.00	4.8780	2.382	0.055	0.024	0.004	0.16895
2060.00	4.8544	2.382	0.055	0.024	0.004	0.16900
2070.00	4.8309	2.382	0.055	0.024	0.004	0.16905
2080.00	4.8077	2.382	0.055	0.024	0.004	0.16905
2090.00	4.7847	2.383	0.055	0.024	0.004	0.16910
2100.00	4.7619	2.383	0.055	0.024	0.004	0.16910
2110.00	4.7393	2.383	0.055	0.024	0.004	0.16910
2120.00	4.7170	2.383	0.055	0.024	0.004	0.16910
2130.00	4.6948	2.383	0.055	0.024	0.004	0.16915
2140.00	4.6729	2.383	0.054	0.024	0.004	0.16920
2150.00	4.6512	2.383	0.054	0.024	0.004	0.16920
2160.00	4.6296	2.384	0.054	0.024	0.004	0.16925
2170.00	4.6083	2.384	0.053	0.024	0.004	0.16935

WN	WL	N	K	DN	DK	R
2180.00	4.5872	2.385	0.053	0.024	0.004	0.16940
2190.00	4.5662	2.385	0.053	0.024	0.004	0.16940
2200.00	4.5455	2.385	0.053	0.024	0.004	0.16945
2210.00	4.5249	2.386	0.053	0.024	0.004	0.16950
2220.00	4.5045	2.386	0.052	0.024	0.004	0.16955
2230.00	4.4843	2.386	0.052	0.024	0.004	0.16960
2240.00	4.4643	2.387	0.052	0.024	0.004	0.16965
2250.00	4.4444	2.387	0.051	0.024	0.004	0.16973
2260.00	4.4248	2.388	0.051	0.024	0.004	0.16980
2270.00	4.4053	2.388	0.051	0.024	0.004	0.16990
2280.00	4.3860	2.389	0.051	0.024	0.004	0.16995
2290.00	4.3668	2.389	0.051	0.024	0.004	0.17000
2300.00	4.3478	2.389	0.051	0.024	0.004	0.17005
2310.00	4.3290	2.389	0.051	0.024	0.004	0.17005
2320.00	4.3103	2.390	0.051	0.024	0.004	0.17010
2330.00	4.2918	2.390	0.051	0.024	0.004	0.17015
2340.00	4.2735	2.390	0.051	0.024	0.004	0.17020
2350.00	4.2553	2.391	0.050	0.024	0.004	0.17025
2360.00	4.2373	2.391	0.050	0.024	0.004	0.17030
2370.00	4.2194	2.392	0.050	0.024	0.004	0.17040
2380.00	4.2017	2.392	0.050	0.024	0.004	0.17045
2390.00	4.1841	2.393	0.050	0.024	0.004	0.17050
2400.00	4.1667	2.393	0.050	0.024	0.004	0.17055
2410.00	4.1494	2.393	0.050	0.024	0.004	0.17060
2420.00	4.1322	2.393	0.050	0.024	0.004	0.17060
2430.00	4.1152	2.393	0.050	0.024	0.004	0.17060
2440.00	4.0984	2.394	0.050	0.024	0.004	0.17065
2450.00	4.0816	2.394	0.050	0.024	0.004	0.17070
2460.00	4.0650	2.394	0.050	0.024	0.004	0.17075
2470.00	4.0486	2.395	0.050	0.024	0.004	0.17080
2480.00	4.0323	2.395	0.049	0.024	0.004	0.17085
2490.00	4.0161	2.396	0.050	0.024	0.004	0.17095
2500.00	4.0000	2.396	0.050	0.024	0.004	0.17100
2510.00	3.9841	2.396	0.051	0.024	0.004	0.17105
2520.00	3.9683	2.396	0.051	0.024	0.004	0.17100
2530.00	3.9526	2.395	0.051	0.024	0.004	0.17090
2540.00	3.9370	2.395	0.051	0.024	0.004	0.17080
2550.00	3.9216	2.394	0.050	0.024	0.004	0.17075
2560.00	3.9063	2.395	0.049	0.024	0.004	0.17080
2570.00	3.8911	2.395	0.049	0.024	0.004	0.17085
2580.00	3.8760	2.395	0.049	0.024	0.004	0.17085
2590.00	3.8610	2.395	0.049	0.024	0.004	0.17085
2600.00	3.8462	2.395	0.048	0.024	0.004	0.17090
2610.00	3.8314	2.396	0.048	0.024	0.004	0.17095
2620.00	3.8168	2.396	0.048	0.024	0.004	0.17095
2630.00	3.8023	2.396	0.048	0.024	0.004	0.17095
2640.00	3.7879	2.396	0.048	0.024	0.004	0.17095
2650.00	3.7736	2.396	0.047	0.024	0.004	0.17095
2660.00	3.7594	2.396	0.047	0.024	0.004	0.17095
2670.00	3.7453	2.396	0.046	0.024	0.004	0.17095

WN	WL	N	K	DN	DK	R
2680.00	3.7313	2.396	0.045	0.024	0.004	0.17100
2690.00	3.7175	2.397	0.045	0.024	0.003	0.17110
2700.00	3.7037	2.398	0.044	0.024	0.003	0.17125
2710.00	3.6900	2.399	0.044	0.024	0.003	0.17140
2720.00	3.6765	2.399	0.045	0.024	0.003	0.17145
2730.00	3.6630	2.400	0.045	0.024	0.003	0.17155
2740.00	3.6496	2.400	0.046	0.024	0.004	0.17155
2750.00	3.6364	2.400	0.046	0.024	0.004	0.17150
2760.00	3.6232	2.400	0.046	0.024	0.004	0.17150
2770.00	3.6101	2.400	0.046	0.024	0.004	0.17150
2780.00	3.5971	2.399	0.046	0.024	0.004	0.17145
2790.00	3.5842	2.399	0.046	0.024	0.004	0.17145
2800.00	3.5714	2.399	0.045	0.024	0.003	0.17140
2810.00	3.5587	2.399	0.045	0.024	0.003	0.17140
2820.00	3.5461	2.399	0.044	0.024	0.003	0.17135
2830.00	3.5336	2.399	0.043	0.024	0.003	0.17135
2840.00	3.5211	2.399	0.042	0.024	0.003	0.17140
2850.00	3.5088	2.400	0.042	0.024	0.003	0.17150
2860.00	3.4965	2.401	0.041	0.024	0.003	0.17160
2870.00	3.4843	2.401	0.041	0.024	0.003	0.17165
2880.00	3.4722	2.401	0.041	0.024	0.003	0.17165
2890.00	3.4602	2.401	0.040	0.024	0.003	0.17170
2900.00	3.4483	2.402	0.040	0.024	0.003	0.17180
2910.00	3.4364	2.403	0.039	0.024	0.003	0.17195
2920.00	3.4247	2.404	0.039	0.024	0.003	0.17205
2930.00	3.4130	2.404	0.040	0.024	0.003	0.17210
2940.00	3.4014	2.405	0.039	0.024	0.003	0.17215
2950.00	3.3898	2.405	0.039	0.024	0.003	0.17225
2960.00	3.3784	2.406	0.039	0.024	0.003	0.17235
2970.00	3.3670	2.406	0.040	0.024	0.003	0.17240
2980.00	3.3557	2.406	0.040	0.024	0.003	0.17240
2990.00	3.3445	2.406	0.039	0.024	0.003	0.17240
3000.00	3.3333	2.407	0.039	0.024	0.003	0.17255
3010.00	3.3223	2.408	0.038	0.025	0.003	0.17270
3020.00	3.3113	2.410	0.039	0.025	0.003	0.17285
3030.00	3.3003	2.410	0.039	0.025	0.003	0.17290
3040.00	3.2895	2.411	0.040	0.025	0.003	0.17300
3050.00	3.2787	2.411	0.041	0.025	0.003	0.17300
3060.00	3.2680	2.410	0.041	0.025	0.003	0.17295
3070.00	3.2573	2.410	0.041	0.025	0.003	0.17295
3080.00	3.2468	2.410	0.041	0.025	0.003	0.17300
3090.00	3.2362	2.410	0.041	0.025	0.003	0.17300
3100.00	3.2258	2.410	0.041	0.025	0.003	0.17295
3110.00	3.2154	2.410	0.041	0.025	0.003	0.17295
3120.00	3.2051	2.410	0.041	0.025	0.003	0.17295
3130.00	3.1949	2.411	0.040	0.025	0.003	0.17305
3140.00	3.1847	2.412	0.040	0.025	0.003	0.17315
3150.00	3.1746	2.412	0.040	0.025	0.003	0.17325
3160.00	3.1646	2.413	0.041	0.025	0.003	0.17330
3170.00	3.1546	2.413	0.042	0.025	0.003	0.17340

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.413	0.043	0.025	0.003	0.17340
3190.00	3.1348	2.412	0.043	0.025	0.003	0.17325
3200.00	3.1250	2.411	0.043	0.025	0.003	0.17315
3210.00	3.1153	2.411	0.043	0.025	0.003	0.17310
3220.00	3.1056	2.411	0.042	0.025	0.003	0.17305
3230.00	3.0960	2.411	0.042	0.025	0.003	0.17305
3240.00	3.0864	2.411	0.042	0.025	0.003	0.17305
3250.00	3.0769	2.410	0.042	0.025	0.003	0.17300
3260.00	3.0675	2.410	0.041	0.025	0.003	0.17300
3270.00	3.0581	2.410	0.041	0.025	0.003	0.17295
3280.00	3.0488	2.410	0.040	0.025	0.003	0.17295
3290.00	3.0395	2.411	0.039	0.025	0.003	0.17300
3300.00	3.0303	2.411	0.039	0.025	0.003	0.17310
3310.00	3.0211	2.412	0.039	0.025	0.003	0.17325
3320.00	3.0120	2.413	0.039	0.025	0.003	0.17335
3330.00	3.0030	2.413	0.039	0.025	0.003	0.17330
3340.00	2.9940	2.412	0.039	0.025	0.003	0.17325
3350.00	2.9851	2.412	0.038	0.025	0.003	0.17325
3360.00	2.9762	2.413	0.037	0.025	0.003	0.17335
3370.00	2.9674	2.414	0.037	0.025	0.003	0.17350
3380.00	2.9586	2.415	0.037	0.025	0.003	0.17360
3390.00	2.9499	2.416	0.038	0.025	0.003	0.17370
3400.00	2.9412	2.416	0.038	0.025	0.003	0.17370
3410.00	2.9326	2.416	0.038	0.025	0.003	0.17375
3420.00	2.9240	2.416	0.038	0.025	0.003	0.17375
3430.00	2.9155	2.416	0.038	0.025	0.003	0.17370
3440.00	2.9070	2.416	0.038	0.025	0.003	0.17380
3450.00	2.8986	2.417	0.038	0.025	0.003	0.17390
3460.00	2.8902	2.418	0.038	0.025	0.003	0.17400
3470.00	2.8818	2.418	0.038	0.025	0.003	0.17405
3480.00	2.8736	2.418	0.039	0.025	0.003	0.17410
3490.00	2.8653	2.418	0.039	0.025	0.003	0.17410
3500.00	2.8571	2.418	0.039	0.025	0.003	0.17405
3510.00	2.8490	2.418	0.039	0.025	0.003	0.17405
3520.00	2.8409	2.418	0.039	0.025	0.003	0.17410
3530.00	2.8329	2.419	0.039	0.025	0.003	0.17415
3540.00	2.8249	2.419	0.039	0.025	0.003	0.17415
3550.00	2.8169	2.419	0.039	0.025	0.003	0.17415
3560.00	2.8090	2.419	0.039	0.025	0.003	0.17420
3570.00	2.8011	2.419	0.039	0.025	0.003	0.17420
3580.00	2.7933	2.419	0.040	0.025	0.003	0.17425
3590.00	2.7855	2.419	0.040	0.025	0.003	0.17425
3600.00	2.7778	2.419	0.040	0.025	0.003	0.17425
3610.00	2.7701	2.420	0.040	0.025	0.003	0.17430
3620.00	2.7624	2.420	0.041	0.025	0.003	0.17430
3630.00	2.7548	2.419	0.041	0.025	0.003	0.17420
3640.00	2.7473	2.419	0.041	0.025	0.003	0.17415
3650.00	2.7397	2.418	0.040	0.025	0.003	0.17410
3660.00	2.7322	2.418	0.040	0.025	0.003	0.17405
3670.00	2.7248	2.418	0.039	0.025	0.003	0.17405

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.419	0.038	0.025	0.003	0.17415
3690.00	2.7100	2.419	0.038	0.025	0.003	0.17425
3700.00	2.7027	2.420	0.038	0.025	0.003	0.17435
3710.00	2.6954	2.420	0.039	0.025	0.003	0.17440
3720.00	2.6882	2.420	0.039	0.025	0.003	0.17440
3730.00	2.6810	2.420	0.039	0.025	0.003	0.17435
3740.00	2.6738	2.420	0.039	0.025	0.003	0.17435
3750.00	2.6667	2.420	0.038	0.025	0.003	0.17440
3760.00	2.6596	2.421	0.038	0.025	0.003	0.17445
3770.00	2.6525	2.421	0.039	0.025	0.003	0.17450
3780.00	2.6455	2.421	0.039	0.025	0.003	0.17450
3790.00	2.6385	2.421	0.039	0.025	0.003	0.17445
3800.00	2.6316	2.421	0.038	0.025	0.003	0.1745
3810.00	2.6247	2.421	0.038	0.025	0.003	
3820.00	2.6178	2.421	0.037	0.025	0.003	
3830.00	2.6110	2.422	0.037	0.025	0.003	0.1745
3840.00	2.6042	2.423	0.038	0.025	0.003	0.1745
3850.00	2.5974	2.423	0.038	0.025	0.003	0.17470
3860.00	2.5907	2.422	0.038	0.025	0.003	0.17465
3870.00	2.5840	2.422	0.038	0.025	0.003	0.17465
3880.00	2.5773	2.422	0.038	0.025	0.003	0.17465
3890.00	2.5707	2.422	0.038	0.025	0.003	0.17465
3900.00	2.5641	2.422	0.037	0.025	0.003	0.17465
3910.00	2.5575	2.423	0.036	0.025	0.003	0.17480
3920.00	2.5510	2.424	0.036	0.025	0.003	0.17495
3930.00	2.5445	2.425	0.037	0.025	0.003	0.17505
3940.00	2.5381	2.425	0.037	0.025	0.003	0.17500
3950.00	2.5316	2.425	0.037	0.025	0.003	0.17500
3960.00	2.5253	2.425	0.037	0.025	0.003	0.17505
3970.00	2.5189	2.425	0.037	0.025	0.003	0.17510
3980.00	2.5126	2.426	0.037	0.025	0.003	0.17515
3990.00	2.5063	2.426	0.038	0.025	0.003	0.17520
4000.00	2.5000	2.426	0.037	0.025	0.003	0.17520
4016.06	2.4900	2.427	0.038	0.025	0.003	0.17530
4032.26	2.4800	2.427	0.038	0.025	0.003	0.17540
4048.58	2.4700	2.428	0.039	0.025	0.003	0.17545
4065.04	2.4600	2.428	0.039	0.025	0.003	0.17550
4081.63	2.4500	2.428	0.040	0.025	0.003	0.17550
4098.36	2.4400	2.428	0.040	0.025	0.003	0.17545
4115.23	2.4300	2.428	0.040	0.025	0.003	0.17545
4132.23	2.4200	2.428	0.040	0.025	0.003	0.17545
4149.38	2.4100	2.428	0.040	0.025	0.003	0.17550
4166.67	2.4000	2.428	0.040	0.025	0.003	0.17550
4184.10	2.3900	2.428	0.041	0.025	0.003	0.17550
4201.68	2.3800	2.428	0.040	0.025	0.003	0.17550
4219.41	2.3700	2.428	0.040	0.025	0.003	0.17550
4237.29	2.3600	2.428	0.040	0.025	0.003	0.17555
4255.32	2.3500	2.429	0.041	0.025	0.003	0.17560
4273.50	2.3400	2.429	0.041	0.025	0.003	0.17560
4291.85	2.3300	2.429	0.041	0.025	0.003	0.17560

WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.429	0.041	0.025	0.003	0.17560
4329.00	2.3100	2.429	0.041	0.025	0.003	0.17565
4347.83	2.3000	2.429	0.041	0.025	0.003	0.17570
4366.81	2.2900	2.429	0.041	0.025	0.003	0.17570
4385.96	2.2800	2.429	0.041	0.025	0.003	0.17570
4405.29	2.2700	2.429	0.041	0.025	0.003	0.17570
4424.78	2.2600	2.430	0.041	0.025	0.003	0.17575
4444.44	2.2500	2.430	0.042	0.025	0.003	0.17575
4464.29	2.2400	2.430	0.042	0.025	0.003	0.17575
4484.30	2.2300	2.430	0.042	0.025	0.003	0.17575
4504.50	2.2200	2.430	0.042	0.025	0.003	0.17580
4524.89	2.2100	2.430	0.042	0.025	0.003	0.17580
4545.45	2.2000	2.430	0.042	0.025	0.003	0.17580
4566.21	2.1900	2.430	0.042	0.025	0.003	0.17580
4587.16	2.1800	2.430	0.042	0.025	0.003	0.17580
4608.29	2.1700	2.430	0.042	0.025	0.003	0.17580
4629.63	2.1600	2.430	0.042	0.025	0.003	0.17580
4651.16	2.1500	2.430	0.042	0.025	0.003	0.17580
4672.90	2.1400	2.430	0.042	0.025	0.003	0.17585
4694.84	2.1300	2.430	0.042	0.025	0.003	0.17585
4716.98	2.1200	2.430	0.042	0.025	0.003	0.17585
4739.34	2.1100	2.431	0.041	0.025	0.003	0.17590
4761.90	2.1000	2.431	0.041	0.025	0.003	0.17590
4784.69	2.0900	2.431	0.041	0.025	0.003	0.17595
4807.69	2.0800	2.432	0.042	0.025	0.003	0.17600
4830.92	2.0700	2.431	0.042	0.025	0.003	0.17600
4854.37	2.0600	2.431	0.042	0.025	0.003	0.17600
4878.05	2.0500	2.432	0.042	0.025	0.003	0.17600
4901.96	2.0400	2.432	0.042	0.025	0.003	0.17605
4926.11	2.0300	2.432	0.042	0.025	0.003	0.17605
4950.50	2.0200	2.432	0.042	0.025	0.003	0.17605
4975.12	2.0100	2.432	0.042	0.025	0.003	0.17605
5000.00	2.0000	2.432	0.041	0.025	0.003	0.17610
5025.13	1.9900	2.432	0.041	0.025	0.003	0.17610
5050.51	1.9800	2.433	0.041	0.025	0.003	0.17615
5076.14	1.9700	2.433	0.041	0.025	0.003	0.17620
5102.04	1.9600	2.433	0.041	0.025	0.003	0.17625
5128.21	1.9500	2.434	0.042	0.025	0.003	0.17630
5154.64	1.9400	2.434	0.042	0.025	0.003	0.17630
5181.35	1.9300	2.434	0.042	0.025	0.003	0.17630
5208.33	1.9200	2.434	0.042	0.025	0.003	0.17630
5235.60	1.9100	2.434	0.042	0.025	0.003	0.17630
5263.16	1.9000	2.434	0.043	0.025	0.003	0.17630
5291.01	1.8900	2.433	0.043	0.025	0.003	0.17620
5319.15	1.8800	2.432	0.043	0.025	0.003	0.17605
5347.59	1.8700	2.431	0.042	0.025	0.003	0.17595
5376.34	1.8600	2.431	0.040	0.025	0.003	0.17590
5405.41	1.8500	2.432	0.039	0.025	0.003	0.17605
5434.78	1.8400	2.433	0.038	0.025	0.003	0.17615
5464.48	1.8300	2.433	0.038	0.025	0.003	0.17625

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.434	0.038	0.025	0.003	0.17635
5524.86	1.8100	2.435	0.037	0.025	0.003	0.17650
5555.56	1.8000	2.436	0.037	0.025	0.003	0.17665
5586.59	1.7900	2.437	0.037	0.025	0.003	0.17680
5617.98	1.7800	2.438	0.038	0.025	0.003	0.17685
5649.72	1.7700	2.437	0.039	0.025	0.003	0.17680
5681.82	1.7600	2.438	0.038	0.025	0.003	0.17685
5714.29	1.7500	2.438	0.038	0.025	0.003	0.17690
5747.13	1.7400	2.438	0.038	0.025	0.003	0.17690
5780.35	1.7300	2.438	0.038	0.025	0.003	0.17695
5813.95	1.7200	2.439	0.038	0.025	0.003	0.17700
5847.95	1.7100	2.439	0.038	0.025	0.003	0.17705
5882.35	1.7000	2.440	0.038	0.025	0.003	0.17715
5917.16	1.6900	2.440	0.038	0.025	0.003	0.17720
5952.38	1.6800	2.440	0.038	0.025	0.003	0.17725
5988.02	1.6700	2.441	0.038	0.025	0.003	0.17730
6024.10	1.6600	2.441	0.038	0.025	0.003	0.17735
6060.61	1.6500	2.441	0.038	0.025	0.003	0.17740
6097.56	1.6400	2.441	0.038	0.025	0.003	0.17740
6134.97	1.6300	2.442	0.038	0.025	0.003	0.17745
6172.84	1.6200	2.442	0.038	0.025	0.003	0.17745
6211.18	1.6100	2.442	0.038	0.025	0.003	0.17745
6250.00	1.6000	2.442	0.037	0.025	0.003	0.17750
6289.31	1.5900	2.443	0.036	0.025	0.003	0.17760
6329.11	1.5800	2.444	0.036	0.025	0.003	0.17770
6369.43	1.5700	2.445	0.036	0.025	0.003	0.17785
6410.26	1.5600	2.446	0.036	0.025	0.003	0.17800
6451.61	1.5500	2.446	0.037	0.025	0.003	0.17800
6493.51	1.5400	2.446	0.037	0.025	0.003	0.17800
6535.95	1.5300	2.446	0.036	0.025	0.003	0.17805
6578.95	1.5200	2.447	0.036	0.025	0.003	0.17815
6622.52	1.5100	2.448	0.036	0.025	0.003	0.17825
6666.67	1.5000	2.448	0.035	0.025	0.003	0.17830
6711.41	1.4900	2.449	0.035	0.025	0.003	0.17840
6756.76	1.4800	2.449	0.035	0.026	0.003	0.17850
6802.72	1.4700	2.450	0.035	0.026	0.003	0.17860
6849.32	1.4600	2.451	0.034	0.026	0.003	0.17875
6896.55	1.4500	2.452	0.034	0.026	0.003	0.17885
6944.44	1.4400	2.453	0.035	0.026	0.003	0.17900
6993.01	1.4300	2.453	0.035	0.026	0.003	0.17905
7042.25	1.4200	2.454	0.035	0.026	0.003	0.17910
7092.20	1.4100	2.454	0.034	0.026	0.003	0.17920
7142.86	1.4000	2.455	0.034	0.026	0.003	0.17930
7194.24	1.3900	2.456	0.034	0.026	0.003	0.17940
7246.38	1.3800	2.457	0.033	0.026	0.003	0.17955
7299.27	1.3700	2.458	0.033	0.026	0.003	0.17970
7352.94	1.3600	2.459	0.033	0.026	0.003	0.17990
7407.41	1.3500	2.460	0.033	0.026	0.003	0.18005
7462.69	1.3400	2.461	0.033	0.026	0.003	0.18020
7518.80	1.3300	2.463	0.033	0.026	0.003	0.18040



WN	WL	N	K	DN	DK	R
7575.76	1.3200	2.463	0.033	0.026	0.003	0.18045
7633.59	1.3100	2.464	0.033	0.026	0.003	0.18060
7692.31	1.3000	2.465	0.033	0.026	0.003	0.18070
7751.94	1.2900	2.466	0.032	0.026	0.003	0.18090
7812.50	1.2800	2.468	0.032	0.026	0.002	0.18110
7874.02	1.2700	2.470	0.032	0.026	0.003	0.18135
7936.51	1.2600	2.471	0.033	0.026	0.003	0.18155
8000.00	1.2500	2.473	0.033	0.026	0.003	0.18180
8064.52	1.2400	2.473	0.033	0.026	0.003	0.18190
8130.08	1.2300	2.474	0.034	0.026	0.003	0.18205
8196.72	1.2200	2.476	0.033	0.026	0.003	0.18225
8264.46	1.2100	2.477	0.034	0.026	0.003	0.18245
8333.33	1.2000	2.479	0.034	0.026	0.003	0.18265
8403.36	1.1900	2.480	0.034	0.026	0.003	0.18285
8474.58	1.1800	2.482	0.033	0.026	0.003	0.18305
8547.01	1.1700	2.483	0.033	0.026	0.003	0.18330
8620.69	1.1600	2.486	0.034	0.026	0.003	0.18365
8695.65	1.1500	2.488	0.034	0.026	0.003	0.18395
8771.93	1.1400	2.490	0.035	0.027	0.003	0.18420
8849.56	1.1300	2.491	0.036	0.027	0.003	0.18440
8928.57	1.1200	2.492	0.036	0.027	0.003	0.18455
9009.01	1.1100	2.494	0.036	0.027	0.003	0.18480
9090.91	1.1000	2.496	0.036	0.027	0.003	0.18505
9174.31	1.0900	2.498	0.037	0.027	0.003	0.18535
9259.26	1.0800	2.500	0.037	0.027	0.003	0.18570
9345.79	1.0700	2.502	0.038	0.027	0.003	0.18600
9433.96	1.0600	2.504	0.038	0.027	0.003	0.18630
9523.81	1.0500	2.507	0.039	0.027	0.003	0.18675
9615.38	1.0400	2.510	0.039	0.027	0.003	0.18705
9708.74	1.0300	2.512	0.040	0.027	0.003	0.18740
9803.92	1.0200	2.515	0.042	0.027	0.003	0.18775
9900.99	1.0100	2.517	0.042	0.027	0.003	0.18805
10000.00	1.0000	2.520	0.043	0.027	0.003	0.18845
10101.01	0.9900	2.522	0.045	0.027	0.004	0.18885
10204.08	0.9800	2.525	0.046	0.027	0.004	0.18920
10309.28	0.9700	2.527	0.048	0.028	0.004	0.18955
10416.67	0.9600	2.529	0.049	0.028	0.004	0.18980
10526.32	0.9500	2.531	0.051	0.028	0.004	0.19005
10638.30	0.9400	2.533	0.051	0.028	0.004	0.19035
10752.69	0.9300	2.535	0.052	0.028	0.004	0.19065
10869.57	0.9200	2.537	0.053	0.028	0.004	0.19100
10989.01	0.9100	2.541	0.053	0.028	0.004	0.19145
11111.11	0.9000	2.544	0.054	0.028	0.004	0.19190
11235.96	0.8900	2.547	0.056	0.028	0.004	0.19230
11363.64	0.8800	2.549	0.057	0.028	0.005	0.19270
11494.25	0.8700	2.552	0.058	0.028	0.005	0.19310
11627.91	0.8600	2.555	0.058	0.028	0.005	0.19350
11764.71	0.8500	2.559	0.059	0.028	0.005	0.19400
11914.76	0.8400	2.562	0.059	0.028	0.005	0.19445
12048.19	0.8300	2.566	0.059	0.029	0.005	0.19500

WN	WL	N	K	DN	EK	R
12195.12	0.8200	2.570	0.058	0.029	0.005	0.19555
12345.68	0.8100	2.575	0.057	0.029	0.005	0.19625
12500.00	0.8000	2.582	0.057	0.029	0.004	0.19715
12658.23	0.7900	2.589	0.057	0.029	0.005	0.19815
12820.51	0.7800	2.596	0.058	0.029	0.005	0.19920
12987.01	0.7700	2.604	0.059	0.030	0.005	0.20025
13157.89	0.7600	2.612	0.060	0.030	0.005	0.20140
13333.33	0.7500	2.621	0.061	0.030	0.005	0.20265
13513.51	0.7400	2.631	0.063	0.030	0.005	0.20400
13698.63	0.7300	2.641	0.066	0.031	0.005	0.20540
13888.89	0.7200	2.652	0.068	0.031	0.005	0.20685
14084.51	0.7100	2.662	0.072	0.031	0.006	0.20835
14285.71	0.7000	2.675	0.075	0.032	0.006	0.21005
14492.75	0.6900	2.688	0.078	0.032	0.006	0.21190
14705.88	0.6800	2.703	0.083	0.032	0.007	0.21390
14925.37	0.6700	2.719	0.089	0.033	0.007	0.21615
15151.52	0.6600	2.736	0.096	0.033	0.008	0.21845
15384.62	0.6500	2.753	0.103	0.034	0.008	0.22085
15625.00	0.6400	2.775	0.110	0.035	0.009	0.22375
15873.02	0.6300	2.800	0.119	0.035	0.010	0.22720
16129.03	0.6200	2.830	0.134	0.036	0.011	0.23135
16393.44	0.6100	2.862	0.156	0.038	0.013	0.23585
16666.67	0.6000	2.898	0.186	0.039	0.015	0.24090
16949.15	0.5900	2.931	0.229	0.041	0.019	0.24605
17241.38	0.5800	2.956	0.286	0.042	0.023	0.25055
17543.86	0.5700	2.963	0.351	0.044	0.029	0.25345
17857.14	0.5600	2.951	0.413	0.045	0.033	0.25420
18181.82	0.5500	2.927	0.460	0.046	0.037	0.25320
18518.52	0.5400	2.901	0.492	0.046	0.039	0.25160
18867.92	0.5300	2.885	0.512	0.046	0.040	0.25060
19230.77	0.5200	2.881	0.532	0.047	0.042	0.25115
19607.84	0.5100	2.887	0.560	0.048	0.044	0.25340
20000.00	0.5000	2.893	0.602	0.050	0.046	0.25645
20408.16	0.4900	2.890	0.654	0.052	0.050	0.25920
20833.33	0.4800	2.876	0.707	0.054	0.053	0.26110
21276.60	0.4700	2.858	0.758	0.056	0.056	0.26265
21739.13	0.4600	2.837	0.813	0.058	0.059	0.26455
22222.22	0.4500	2.809	0.873	0.060	0.061	0.26640
22727.27	0.4400	2.766	0.936	0.063	0.064	0.26750
23255.81	0.4300	2.708	0.993	0.065	0.065	0.26710
23809.52	0.4200	2.638	1.040	0.067	0.065	0.26520
24390.24	0.4100	2.560	1.075	0.068	0.064	0.26175
25000.00	0.4000	2.475	1.096	0.068	0.062	0.25655
25641.03	0.3900	2.387	1.097	0.067	0.060	0.24895
26315.79	0.3800	2.305	1.075	0.065	0.057	0.23885
27027.03	0.3700	2.243	1.034	0.062	0.054	0.22775
27777.78	0.3600	2.211	0.987	0.059	0.052	0.21830
28571.43	0.3500	2.206	0.951	0.057	0.051	0.21305
29411.76	0.3400	2.219	0.947	0.057	0.051	0.21370
30303.03	0.3300	2.218	0.979	0.059	0.052	0.21790

WN	WL	N	K	DN	DK	R
31250.00	0.3200	2.185	1.018	0.061	0.052	0.22035
32258.06	0.3100	2.134	1.041	0.062	0.050	0.21940
33333.33	0.3000	2.090	1.053	0.063	0.049	0.21770
34482.76	0.2900	2.049	1.076	0.064	0.047	0.21810
35714.29	0.2800	1.992	1.107	0.066	0.045	0.21925
37037.04	0.2700	1.917	1.133	0.067	0.041	0.21920
38461.54	0.2600	1.828	1.148	0.068	0.037	0.21730
40000.00	0.2500	1.733	1.149	0.067	0.031	0.21345
41666.67	0.2400	1.635	1.145	0.067	0.025	0.20980
43478.26	0.2300	1.517	1.145	0.066	0.018	0.20860
45454.55	0.2200	1.349	1.127	0.069	0.025	0.20735
47619.05	0.2100	1.108	1.048	0.066	0.035	0.20265

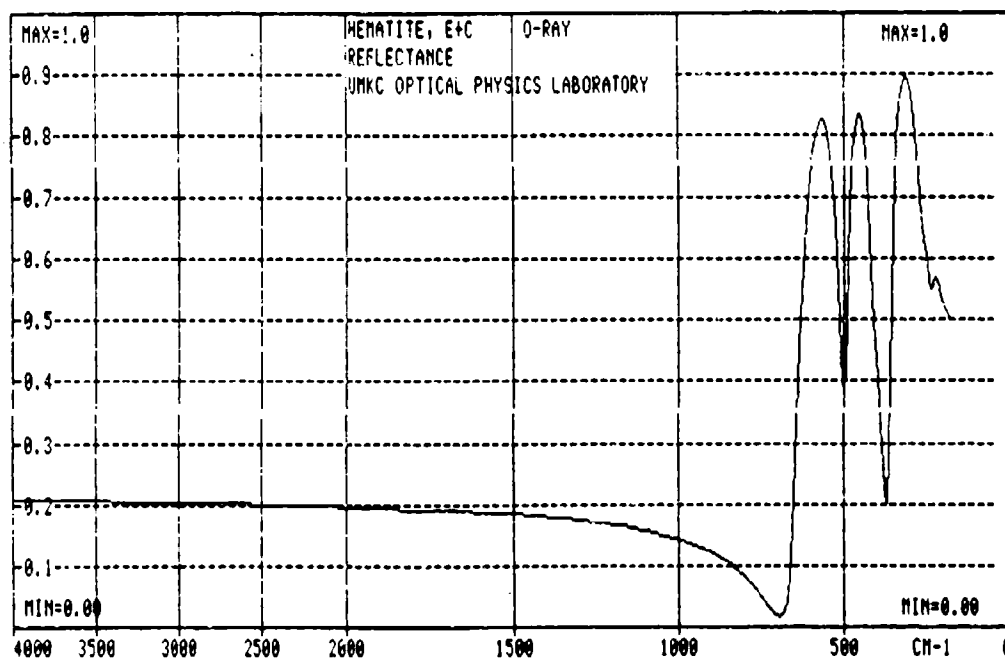


Figure 28. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) for E+C.

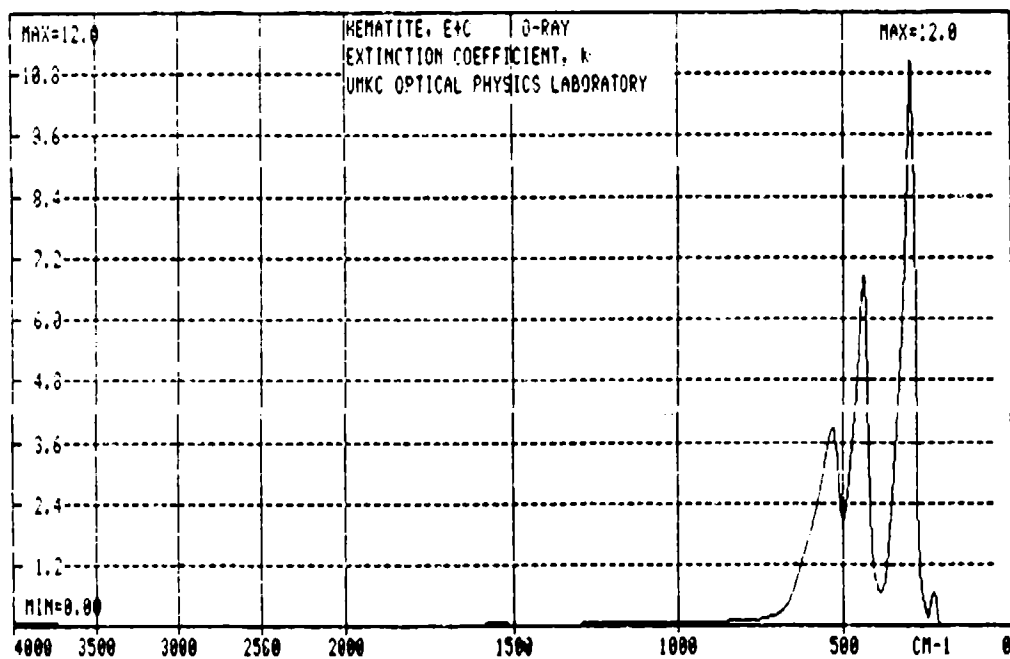


Figure 29. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) refractive index  $n$  of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) for E+C.

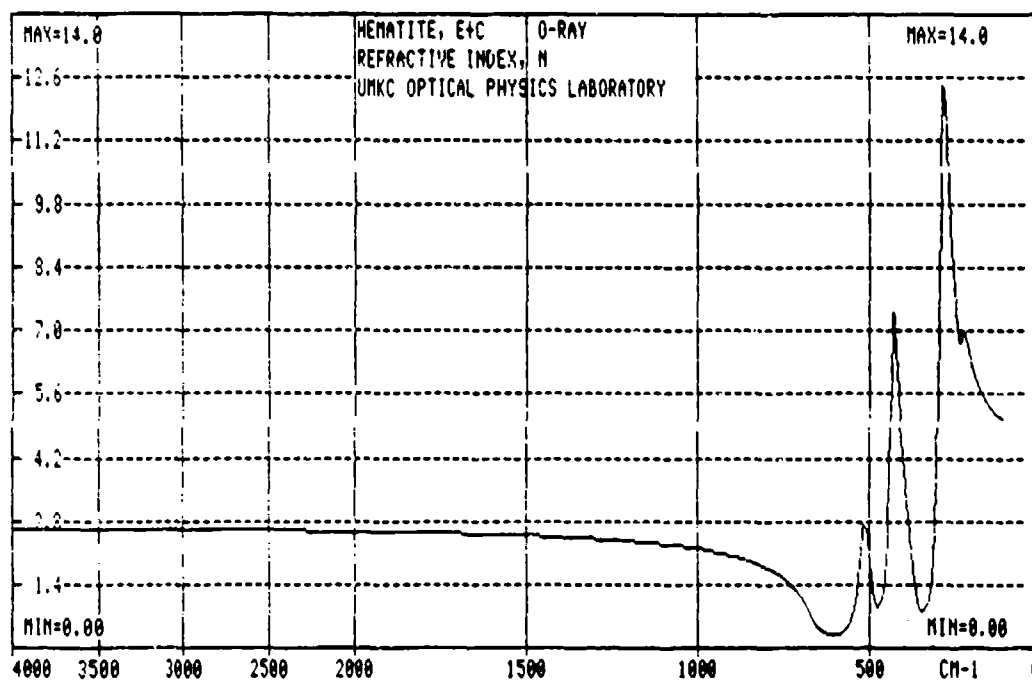


Figure 30. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) extinction coefficient  $k$  of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) for E+C.

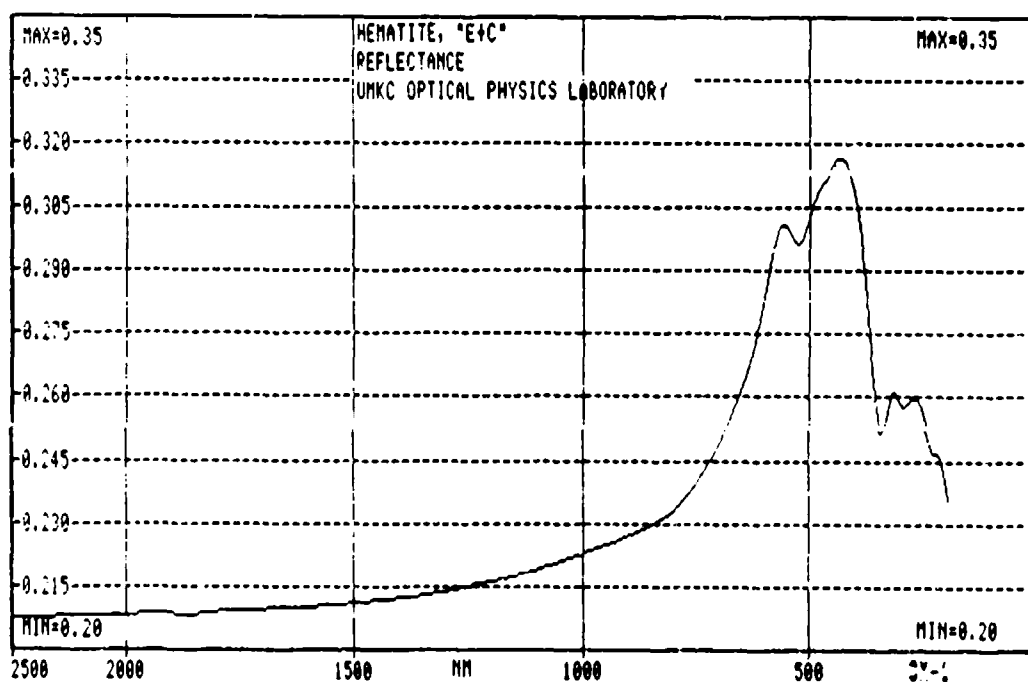


Figure 31. The uv-vis-nir ( $2,500\text{--}200\text{ nm}$ ) reflectance spectrum of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) used for E+C.

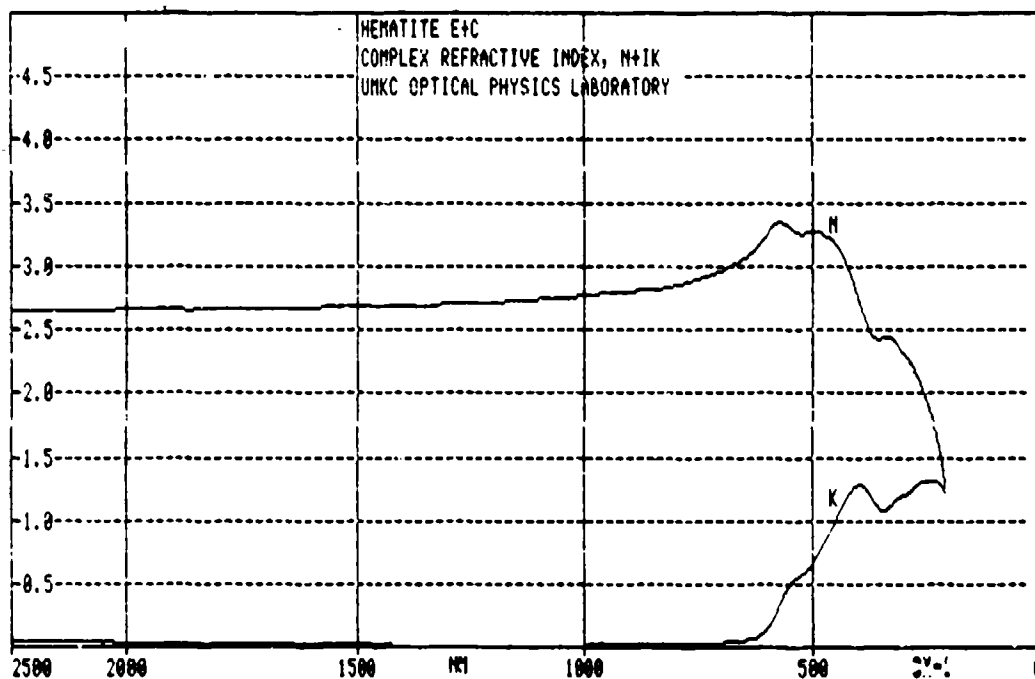


Figure 32. The uv-vis-nir (2,500-210 nm) refractive index  $n$  of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) for E+C.

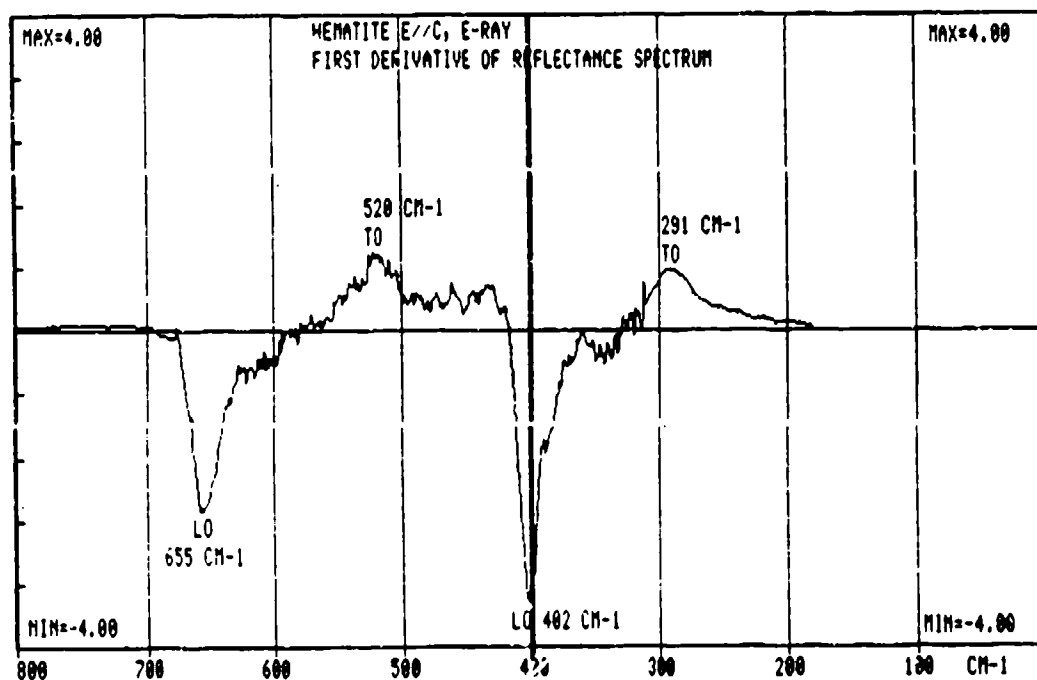


Figure 33. The first derivative of the infrared reflectance spectrum of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) for E//C.

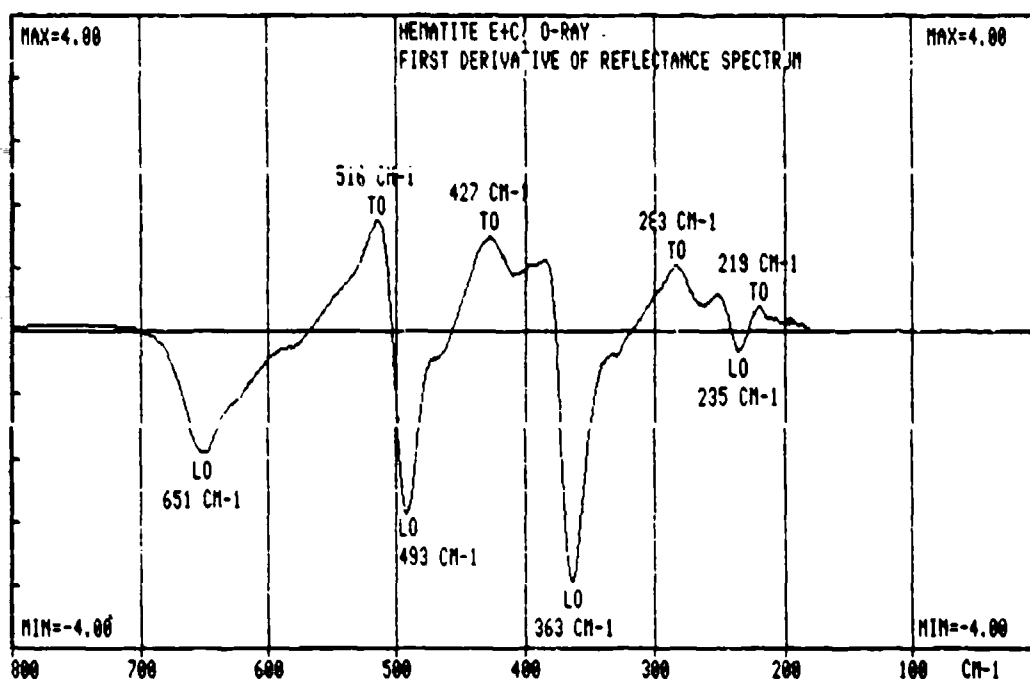


Figure 34. The first derivative of the infrared reflectance spectrum of hematite ( $\alpha\text{-Fe}_2\text{O}_3$ ) for E+C.

WN	WL	N	K	DN	DK	R
110.00	90.9091	5.005	-0.076	0.123	0.008	0.44717
120.00	83.3333	5.060	-0.085	0.126	0.009	0.45125
130.00	76.9231	5.124	-0.094	0.129	0.010	0.45590
140.00	71.4286	5.198	-0.103	0.133	0.011	0.46121
150.00	66.6667	5.285	-0.113	0.137	0.012	0.46729
160.00	62.5000	5.387	-0.124	0.143	0.013	0.47427
170.00	58.8235	5.509	-0.134	0.150	0.015	0.48238
180.00	55.5556	5.658	-0.144	0.158	0.016	0.49191
190.00	52.6316	5.844	-0.148	0.169	0.017	0.50341
200.00	50.0000	6.094	-0.117	0.184	0.013	0.51795
210.00	47.6190	6.359	-0.074	0.201	0.009	0.53250
220.00	45.4545	6.789	0.030	0.230	0.004	0.55450
230.00	43.4783	7.022	0.668	0.251	0.083	0.56860
240.00	41.6667	6.649	0.601	0.224	0.072	0.55030
250.00	40.0000	7.290	0.132	0.266	0.017	0.57785
260.00	38.4615	8.312	0.389	0.348	0.053	0.61915
270.00	37.0370	9.433	0.782	0.452	0.116	0.65705
280.00	35.7143	11.932	2.150	0.737	0.368	0.72380
290.00	34.4828	12.585	8.306	0.857	1.237	0.80260
300.00	33.3333	6.494	11.145	0.938	1.033	0.85685
310.00	32.2581	2.681	9.062	0.648	0.655	0.88860
320.00	31.2500	1.402	6.922	0.381	0.443	0.89620
330.00	30.3030	1.005	5.382	0.250	0.328	0.87885
340.00	29.4118	0.846	4.284	0.180	0.256	0.84550
350.00	28.5714	0.808	3.245	0.134	0.191	0.76735
360.00	27.7778	1.030	2.254	0.114	0.120	0.55465
370.00	27.0270	1.554	1.390	0.082	0.032	0.26730
380.00	26.3158	2.383	0.803	0.050	0.051	0.21360
390.00	25.6410	3.262	0.656	0.062	0.053	0.30055
400.00	25.0000	4.100	0.718	0.092	0.066	0.38405
410.00	24.3902	4.966	0.982	0.136	0.098	0.45890
420.00	23.8095	6.229	1.587	0.221	0.174	0.54725
430.00	23.2558	7.431	4.077	0.376	0.423	0.66285
440.00	22.7273	4.992	6.991	0.479	0.481	0.76580
450.00	22.2222	2.230	6.303	0.392	0.410	0.82320
460.00	21.7391	1.268	4.993	0.249	0.305	0.83235
470.00	21.2766	1.015	4.068	0.184	0.242	0.80410
480.00	20.8333	0.902	3.328	0.145	0.195	0.75580
490.00	20.4082	1.105	2.553	0.129	0.137	0.59830
500.00	20.0000	1.764	2.054	0.121	0.069	0.40755
510.00	19.6078	2.673	2.292	0.129	0.071	0.43200
520.00	19.2308	2.820	3.368	0.200	0.138	0.56715
530.00	18.8679	2.007	3.911	0.231	0.211	0.67190
540.00	18.5185	1.265	3.791	0.189	0.220	0.74200
550.00	18.1818	0.787	3.436	0.140	0.203	0.79140
560.00	17.8571	0.522	3.035	0.103	0.180	0.82000
570.00	17.5439	0.395	2.669	0.080	0.160	0.82700
580.00	17.2414	0.342	2.358	0.067	0.143	0.81525
590.00	16.9492	0.318	2.096	0.058	0.130	0.79380
600.00	16.6667	0.304	1.855	0.051	0.118	0.76545



WN	WL	N	K	DN	DK	R
610.00	16.3934	0.307	1.624	0.047	0.107	0.71965
620.00	16.1290	0.327	1.406	0.044	0.096	0.65240
630.00	15.8730	0.361	1.201	0.042	0.087	0.56480
640.00	15.6250	0.403	0.994	0.041	0.077	0.45920
650.00	15.3846	0.478	0.779	0.040	0.065	0.31960
660.00	15.1515	0.601	0.586	0.039	0.051	0.17695
670.00	14.9254	0.754	0.440	0.035	0.034	0.07970
680.00	14.7059	0.910	0.350	0.029	0.016	0.03555
690.00	14.4928	1.037	0.297	0.021	0.004	0.02160
700.00	14.2857	1.145	0.256	0.016	0.009	0.01890
710.00	14.0845	1.238	0.221	0.012	0.011	0.02125
720.00	13.8889	1.322	0.192	0.010	0.011	0.02640
730.00	13.6986	1.399	0.167	0.009	0.010	0.03295
740.00	13.5135	1.471	0.147	0.009	0.010	0.04045
750.00	13.3333	1.536	0.132	0.009	0.009	0.04805
760.00	13.1579	1.597	0.119	0.009	0.008	0.05570
770.00	12.9870	1.653	0.111	0.010	0.008	0.06315
780.00	12.8205	1.702	0.106	0.011	0.007	0.06995
790.00	12.6582	1.745	0.102	0.011	0.007	0.07605
800.00	12.5000	1.786	0.097	0.012	0.007	0.08180
810.00	12.3457	1.823	0.093	0.012	0.007	0.08715
820.00	12.1951	1.857	0.088	0.013	0.006	0.09210
830.00	12.0482	1.891	0.085	0.014	0.006	0.09705
840.00	11.9048	1.921	0.083	0.014	0.006	0.10145
850.00	11.7647	1.949	0.081	0.015	0.006	0.10555
860.00	11.6279	1.974	0.080	0.015	0.006	0.10935
870.00	11.4943	1.999	0.077	0.016	0.006	0.11295
880.00	11.3636	2.023	0.076	0.016	0.006	0.11660
890.00	11.2360	2.045	0.077	0.017	0.006	0.11990
900.00	11.1111	2.065	0.078	0.017	0.006	0.12280
910.00	10.9890	2.081	0.079	0.017	0.006	0.12515
920.00	10.8696	2.095	0.076	0.018	0.006	0.12720
930.00	10.7527	2.110	0.072	0.018	0.005	0.12940
940.00	10.6383	2.126	0.069	0.018	0.005	0.13170
950.00	10.5263	2.141	0.066	0.018	0.005	0.13390
960.00	10.4167	2.155	0.064	0.019	0.005	0.13600
970.00	10.3093	2.170	0.060	0.019	0.005	0.13810
980.00	10.2041	2.185	0.058	0.019	0.004	0.14030
990.00	10.1010	2.199	0.057	0.020	0.004	0.14235
1000.00	10.0000	2.212	0.056	0.020	0.004	0.14425
1010.00	9.9010	2.224	0.055	0.020	0.004	0.14610
1020.00	9.8039	2.236	0.055	0.021	0.004	0.14785
1030.00	9.7087	2.246	0.055	0.021	0.004	0.14930
1040.00	9.6154	2.256	0.054	0.021	0.004	0.15070
1050.00	9.5238	2.265	0.052	0.021	0.004	0.15205
1060.00	9.4340	2.275	0.050	0.021	0.004	0.15345
1070.00	9.3458	2.284	0.048	0.022	0.004	0.15485
1080.00	9.2593	2.294	0.047	0.022	0.004	0.15620
1090.00	9.1743	2.303	0.046	0.022	0.003	0.15750
1100.00	9.0909	2.312	0.045	0.022	0.003	0.15885

WN	WL	N	K	DN	DK	R
1110.00	9.0090	2.321	0.044	0.022	0.003	0.16010
1120.00	8.9286	2.329	0.044	0.023	0.003	0.16125
1130.00	8.8496	2.337	0.044	0.023	0.003	0.16240
1140.00	8.7719	2.344	0.044	0.023	0.003	0.16345
1150.00	8.6957	2.349	0.044	0.023	0.003	0.16425
1160.00	8.6207	2.356	0.043	0.023	0.003	0.16525
1170.00	8.5470	2.363	0.042	0.023	0.003	0.16615
1180.00	8.4746	2.369	0.041	0.024	0.003	0.16705
1190.00	8.4034	2.375	0.040	0.024	0.003	0.16790
1200.00	8.3333	2.381	0.039	0.024	0.003	0.16875
1210.00	8.2645	2.386	0.039	0.024	0.003	0.16955
1220.00	8.1967	2.392	0.038	0.024	0.003	0.17035
1230.00	8.1301	2.398	0.037	0.024	0.003	0.17120
1240.00	8.0645	2.404	0.036	0.024	0.003	0.17200
1250.00	8.0000	2.409	0.036	0.025	0.003	0.17275
1260.00	7.9365	2.414	0.035	0.025	0.003	0.17345
1270.00	7.8740	2.418	0.035	0.025	0.003	0.17410
1280.00	7.8125	2.423	0.034	0.025	0.003	0.17480
1290.00	7.7519	2.428	0.033	0.025	0.003	0.17545
1300.00	7.6923	2.433	0.032	0.025	0.002	0.17615
1310.00	7.6336	2.438	0.031	0.025	0.002	0.17690
1320.00	7.5758	2.443	0.031	0.025	0.002	0.17755
1330.00	7.5188	2.447	0.031	0.025	0.002	0.17820
1340.00	7.4627	2.452	0.030	0.026	0.002	0.17885
1350.00	7.4074	2.457	0.029	0.026	0.002	0.17950
1360.00	7.3529	2.462	0.029	0.026	0.002	0.18020
1370.00	7.2993	2.466	0.030	0.026	0.002	0.18080
1380.00	7.2464	2.469	0.030	0.026	0.002	0.18130
1390.00	7.1942	2.474	0.030	0.026	0.002	0.18190
1400.00	7.1429	2.477	0.030	0.026	0.002	0.18245
1410.00	7.0922	2.481	0.030	0.026	0.002	0.18295
1420.00	7.0423	2.485	0.030	0.026	0.002	0.18350
1430.00	6.9930	2.488	0.031	0.026	0.002	0.18395
1440.00	6.9444	2.491	0.031	0.027	0.002	0.18440
1450.00	6.8966	2.494	0.031	0.027	0.002	0.18485
1460.00	6.8493	2.498	0.032	0.027	0.002	0.18530
1470.00	6.8027	2.500	0.032	0.027	0.003	0.18570
1480.00	6.7568	2.503	0.032	0.027	0.003	0.18600
1490.00	6.7114	2.505	0.032	0.027	0.002	0.18635
1500.00	6.6667	2.508	0.031	0.027	0.002	0.18680
1510.00	6.6225	2.511	0.032	0.027	0.003	0.18725
1520.00	6.5789	2.514	0.033	0.027	0.003	0.18760
1530.00	6.5359	2.516	0.033	0.027	0.003	0.18785
1540.00	6.4935	2.517	0.033	0.027	0.003	0.18810
1550.00	6.4516	2.520	0.033	0.027	0.003	0.18845
1560.00	6.4103	2.522	0.033	0.027	0.003	0.18875
1570.00	6.3694	2.524	0.033	0.027	0.003	0.18900
1580.00	6.3291	2.525	0.033	0.027	0.003	0.18920
1590.00	6.2893	2.527	0.032	0.027	0.003	0.18945
1600.00	6.2500	2.529	0.032	0.028	0.003	0.18975

WN	WL	N	K	DN	DK	R
1610.00	6.2112	2.532	0.031	0.028	0.002	0.19010
1620.00	6.1728	2.534	0.031	0.028	0.002	0.19045
1630.00	6.1350	2.536	0.031	0.028	0.002	0.19075
1640.00	6.0976	2.539	0.032	0.028	0.002	0.19110
1650.00	6.0606	2.541	0.032	0.028	0.003	0.19135
1660.00	6.0241	2.542	0.032	0.028	0.003	0.19150
1670.00	5.9880	2.543	0.032	0.028	0.003	0.19170
1680.00	5.9524	2.545	0.031	0.028	0.002	0.19195
1690.00	5.9172	2.547	0.031	0.028	0.002	0.19225
1700.00	5.8824	2.549	0.032	0.028	0.002	0.19250
1710.00	5.8480	2.551	0.032	0.028	0.003	0.19275
1720.00	5.8140	2.552	0.032	0.028	0.003	0.19295
1730.00	5.7803	2.554	0.031	0.028	0.002	0.19320
1740.00	5.7471	2.556	0.032	0.028	0.002	0.19345
1750.00	5.7143	2.557	0.032	0.028	0.003	0.19365
1760.00	5.6818	2.559	0.032	0.028	0.003	0.19385
1770.00	5.6497	2.560	0.032	0.028	0.003	0.19400
1780.00	5.6180	2.561	0.032	0.028	0.003	0.19415
1790.00	5.5866	2.562	0.032	0.028	0.003	0.19435
1800.00	5.5556	2.564	0.032	0.028	0.002	0.19455
1810.00	5.5249	2.565	0.032	0.028	0.002	0.19475
1820.00	5.4945	2.567	0.032	0.029	0.002	0.19495
1830.00	5.4645	2.568	0.031	0.029	0.002	0.19510
1840.00	5.4348	2.569	0.031	0.029	0.002	0.19530
1850.00	5.4054	2.570	0.031	0.029	0.002	0.19545
1860.00	5.3763	2.572	0.031	0.029	0.002	0.19565
1870.00	5.3476	2.573	0.031	0.029	0.002	0.19585
1880.00	5.3191	2.575	0.031	0.029	0.002	0.19605
1890.00	5.2910	2.575	0.031	0.029	0.002	0.19615
1900.00	5.2632	2.576	0.031	0.029	0.002	0.19630
1910.00	5.2356	2.578	0.031	0.029	0.002	0.19645
1920.00	5.2083	2.579	0.031	0.029	0.002	0.19665
1930.00	5.1813	2.580	0.031	0.029	0.002	0.19685
1940.00	5.1546	2.581	0.031	0.029	0.002	0.19695
1950.00	5.1282	2.582	0.031	0.029	0.002	0.19710
1960.00	5.1020	2.583	0.031	0.029	0.002	0.19720
1970.00	5.0761	2.584	0.031	0.029	0.002	0.19740
1980.00	5.0505	2.585	0.030	0.029	0.002	0.19750
1990.00	5.0251	2.586	0.031	0.029	0.002	0.19765
2000.00	5.0000	2.587	0.031	0.029	0.002	0.19775
2010.00	4.9751	2.588	0.031	0.029	0.002	0.19790
2020.00	4.9505	2.588	0.031	0.029	0.002	0.19795
2030.00	4.9261	2.590	0.031	0.029	0.002	0.19815
2040.00	4.9020	2.591	0.031	0.029	0.002	0.19825
2050.00	4.8780	2.592	0.030	0.029	0.002	0.19840
2060.00	4.8544	2.593	0.030	0.029	0.002	0.19855
2070.00	4.8309	2.593	0.030	0.029	0.002	0.19865
2080.00	4.8077	2.595	0.030	0.029	0.002	0.19880
2090.00	4.7847	2.595	0.030	0.029	0.002	0.19885
2100.00	4.7619	2.596	0.030	0.029	0.002	0.19900

WN	WL	N	K	DN	DK	R
2110.00	4.7393	2.597	0.030	0.029	0.002	0.19910
2120.00	4.7170	2.598	0.030	0.029	0.002	0.19925
2130.00	4.6948	2.598	0.030	0.029	0.002	0.19930
2140.00	4.6729	2.599	0.030	0.029	0.002	0.19940
2150.00	4.6512	2.600	0.030	0.029	0.002	0.19955
2160.00	4.6296	2.601	0.030	0.029	0.002	0.19970
2170.00	4.6083	2.602	0.030	0.029	0.002	0.19980
2180.00	4.5872	2.602	0.030	0.029	0.002	0.19985
2190.00	4.5662	2.603	0.030	0.029	0.002	0.19995
2200.00	4.5455	2.604	0.030	0.029	0.002	0.20005
2210.00	4.5249	2.604	0.030	0.029	0.002	0.20015
2220.00	4.5045	2.605	0.030	0.030	0.002	0.20025
2230.00	4.4843	2.605	0.030	0.030	0.002	0.20030
2240.00	4.4643	2.606	0.030	0.030	0.002	0.20040
2250.00	4.4444	2.607	0.030	0.030	0.002	0.20050
2260.00	4.4248	2.607	0.029	0.030	0.002	0.20055
2270.00	4.4053	2.608	0.029	0.030	0.002	0.20065
2280.00	4.3860	2.609	0.029	0.030	0.002	0.20075
2290.00	4.3668	2.609	0.028	0.030	0.002	0.20085
2300.00	4.3478	2.610	0.028	0.030	0.002	0.20095
2310.00	4.3290	2.611	0.028	0.030	0.002	0.20110
2320.00	4.3103	2.612	0.028	0.030	0.002	0.20125
2330.00	4.2918	2.613	0.028	0.030	0.002	0.20140
2340.00	4.2735	2.615	0.028	0.030	0.002	0.20155
2350.00	4.2553	2.615	0.029	0.030	0.002	0.20165
2360.00	4.2373	2.616	0.030	0.030	0.002	0.20175
2370.00	4.2194	2.616	0.030	0.030	0.002	0.20175
2380.00	4.2017	2.615	0.030	0.030	0.002	0.20165
2390.00	4.1841	2.615	0.029	0.030	0.002	0.20160
2400.00	4.1667	2.616	0.028	0.030	0.002	0.20180
2410.00	4.1494	2.618	0.028	0.030	0.002	0.20205
2420.00	4.1322	2.619	0.028	0.030	0.002	0.20220
2430.00	4.1152	2.619	0.029	0.030	0.002	0.20220
2440.00	4.0984	2.620	0.029	0.030	0.002	0.20225
2450.00	4.0816	2.620	0.028	0.030	0.002	0.20235
2460.00	4.0650	2.621	0.028	0.030	0.002	0.20245
2470.00	4.0486	2.622	0.029	0.030	0.002	0.20255
2480.00	4.0323	2.623	0.029	0.030	0.002	0.20265
2490.00	4.0161	2.623	0.029	0.030	0.002	0.20270
2500.00	4.0000	2.624	0.029	0.030	0.002	0.20280
2510.00	3.9841	2.624	0.029	0.030	0.002	0.20280
2520.00	3.9683	2.624	0.029	0.030	0.002	0.20290
2530.00	3.9526	2.625	0.029	0.030	0.002	0.20295
2540.00	3.9370	2.625	0.030	0.030	0.002	0.20305
2550.00	3.9216	2.625	0.030	0.030	0.002	0.20305
2560.00	3.9063	2.626	0.029	0.030	0.002	0.20315
2570.00	3.8911	2.627	0.030	0.030	0.002	0.20320
2580.00	3.8760	2.627	0.029	0.030	0.002	0.20325
2590.00	3.8610	2.627	0.030	0.030	0.002	0.20330
2600.00	3.8462	2.628	0.030	0.030	0.002	0.20335

WN	WL	N	K	DN	DK	R
2610.00	3.8314	2.628	0.030	0.030	0.002	0.20340
2620.00	3.8168	2.628	0.029	0.030	0.002	0.20345
2630.00	3.8023	2.629	0.029	0.030	0.002	0.20355
2640.00	3.7879	2.630	0.029	0.030	0.002	0.20360
2650.00	3.7736	2.630	0.029	0.030	0.002	0.20370
2660.00	3.7594	2.631	0.030	0.030	0.002	0.20375
2670.00	3.7453	2.631	0.030	0.030	0.002	0.20380
2680.00	3.7313	2.631	0.030	0.030	0.002	0.20385
2690.00	3.7175	2.632	0.030	0.030	0.002	0.20390
2700.00	3.7037	2.632	0.029	0.030	0.002	0.20395
2710.00	3.6900	2.633	0.030	0.030	0.002	0.20405
2720.00	3.6765	2.633	0.030	0.030	0.002	0.20410
2730.00	3.6630	2.634	0.030	0.030	0.002	0.20415
2740.00	3.6496	2.634	0.030	0.030	0.002	0.20420
2750.00	3.6364	2.634	0.030	0.030	0.002	0.20425
2760.00	3.6232	2.635	0.030	0.030	0.002	0.20435
2770.00	3.6101	2.635	0.031	0.030	0.002	0.20435
2780.00	3.5971	2.635	0.031	0.030	0.002	0.20435
2790.00	3.5842	2.635	0.030	0.030	0.002	0.20435
2800.00	3.5714	2.635	0.030	0.030	0.002	0.20440
2810.00	3.5587	2.636	0.030	0.030	0.002	0.20450
2820.00	3.5461	2.637	0.030	0.030	0.002	0.20460
2830.00	3.5336	2.637	0.030	0.030	0.002	0.20465
2840.00	3.5211	2.638	0.030	0.030	0.002	0.20470
2850.00	3.5088	2.638	0.030	0.030	0.002	0.20475
2860.00	3.4965	2.638	0.030	0.030	0.002	0.20480
2870.00	3.4843	2.639	0.030	0.030	0.002	0.20490
2880.00	3.4722	2.639	0.031	0.030	0.002	0.20495
2890.00	3.4602	2.639	0.031	0.030	0.002	0.20495
2900.00	3.4483	2.640	0.031	0.030	0.002	0.20500
2910.00	3.4364	2.640	0.031	0.030	0.002	0.20505
2920.00	3.4247	2.640	0.031	0.030	0.002	0.20510
2930.00	3.4130	2.641	0.032	0.030	0.003	0.20515
2940.00	3.4014	2.640	0.032	0.030	0.003	0.20510
2950.00	3.3898	2.641	0.032	0.030	0.003	0.20515
2960.00	3.3784	2.641	0.032	0.030	0.003	0.20515
2970.00	3.3670	2.641	0.032	0.030	0.003	0.20515
2980.00	3.3557	2.641	0.032	0.030	0.003	0.20515
2990.00	3.3445	2.641	0.032	0.030	0.003	0.20520
3000.00	3.3333	2.641	0.032	0.030	0.003	0.20520
3010.00	3.3223	2.640	0.032	0.030	0.003	0.20510
3020.00	3.3113	2.640	0.032	0.030	0.003	0.20510
3030.00	3.3003	2.642	0.031	0.030	0.002	0.20525
3040.00	3.2895	2.642	0.031	0.030	0.003	0.20530
3050.00	3.2787	2.642	0.031	0.030	0.002	0.20530
3060.00	3.2680	2.642	0.031	0.031	0.002	0.20535
3070.00	3.2573	2.643	0.031	0.031	0.002	0.20545
3080.00	3.2468	2.643	0.031	0.031	0.003	0.20550
3090.00	3.2362	2.643	0.032	0.031	0.003	0.20550
3100.00	3.2258	2.643	0.031	0.031	0.003	0.20550

WN	WL	N	K	DN	DK	R
3110.00	3.2154	2.643	0.031	0.031	0.002	0.20550
3120.00	3.2051	2.644	0.031	0.031	0.002	0.20555
3130.00	3.1949	2.644	0.031	0.031	0.002	0.20555
3140.00	3.1847	2.644	0.031	0.031	0.002	0.20560
3150.00	3.1746	2.644	0.031	0.031	0.002	0.20565
3160.00	3.1646	2.645	0.031	0.031	0.002	0.20570
3170.00	3.1546	2.645	0.031	0.031	0.002	0.20575
3180.00	3.1447	2.646	0.031	0.031	0.002	0.20580
3190.00	3.1348	2.646	0.031	0.031	0.002	0.20585
3200.00	3.1250	2.646	0.031	0.031	0.002	0.20585
3210.00	3.1153	2.646	0.030	0.031	0.002	0.20590
3220.00	3.1056	2.647	0.030	0.031	0.002	0.20600
3230.00	3.0960	2.647	0.030	0.031	0.002	0.20605
3240.00	3.0864	2.648	0.031	0.031	0.002	0.20610
3250.00	3.0769	2.648	0.031	0.031	0.002	0.20615
3260.00	3.0675	2.648	0.031	0.031	0.002	0.20620
3270.00	3.0581	2.648	0.031	0.031	0.003	0.20620
3280.00	3.0488	2.648	0.032	0.031	0.003	0.20615
3290.00	3.0395	2.648	0.031	0.031	0.002	0.20615
3300.00	3.0303	2.649	0.031	0.031	0.002	0.20625
3310.00	3.0211	2.649	0.031	0.031	0.002	0.20630
3320.00	3.0120	2.650	0.031	0.031	0.003	0.20635
3330.00	3.0030	2.650	0.032	0.031	0.003	0.20635
3340.00	2.9940	2.650	0.032	0.031	0.003	0.20635
3350.00	2.9851	2.650	0.032	0.031	0.003	0.20640
3360.00	2.9762	2.650	0.032	0.031	0.003	0.20645
3370.00	2.9674	2.650	0.032	0.031	0.003	0.20640
3380.00	2.9586	2.650	0.032	0.031	0.003	0.20635
3390.00	2.9499	2.650	0.032	0.031	0.003	0.20635
3400.00	2.9412	2.650	0.031	0.031	0.003	0.20640
3410.00	2.9326	2.650	0.031	0.031	0.002	0.20645
3420.00	2.9240	2.650	0.031	0.031	0.002	0.20645
3430.00	2.9155	2.651	0.031	0.031	0.002	0.20655
3440.00	2.9070	2.651	0.031	0.031	0.002	0.20655
3450.00	2.8986	2.651	0.031	0.031	0.002	0.20660
3460.00	2.8902	2.652	0.031	0.031	0.002	0.20665
3470.00	2.8818	2.652	0.031	0.031	0.003	0.20665
3480.00	2.8736	2.652	0.031	0.031	0.003	0.20665
3490.00	2.8653	2.652	0.031	0.031	0.002	0.20670
3500.00	2.8571	2.653	0.031	0.031	0.002	0.20675
3510.00	2.8490	2.653	0.031	0.031	0.002	0.20675
3520.00	2.8409	2.653	0.031	0.031	0.002	0.20675
3530.00	2.8329	2.653	0.031	0.031	0.002	0.20685
3540.00	2.8249	2.654	0.031	0.031	0.002	0.20690
3550.00	2.8169	2.654	0.031	0.031	0.002	0.20695
3560.00	2.8090	2.654	0.031	0.031	0.002	0.20700
3570.00	2.8011	2.655	0.031	0.031	0.003	0.20705
3580.00	2.7933	2.655	0.031	0.031	0.003	0.20705
3590.00	2.7855	2.655	0.031	0.031	0.003	0.20710
3600.00	2.7778	2.655	0.031	0.031	0.003	0.20715

WN	WL	N	K	DN	DK	R
3610.00	2.7701	2.656	0.032	0.031	0.003	0.20720
3620.00	2.7624	2.656	0.032	0.031	0.003	0.20720
3630.00	2.7548	2.655	0.032	0.031	0.003	0.20715
3640.00	2.7473	2.655	0.032	0.031	0.003	0.20715
3650.00	2.7397	2.656	0.032	0.031	0.003	0.20720
3660.00	2.7322	2.656	0.032	0.031	0.003	0.20725
3670.00	2.7248	2.657	0.032	0.031	0.003	0.20730
3680.00	2.7174	2.657	0.032	0.031	0.003	0.20730
3690.00	2.7100	2.657	0.032	0.031	0.003	0.20735
3700.00	2.7027	2.657	0.032	0.031	0.003	0.20735
3710.00	2.6954	2.657	0.032	0.031	0.003	0.20735
3720.00	2.6882	2.657	0.032	0.031	0.003	0.20740
3730.00	2.6810	2.658	0.032	0.031	0.003	0.20750
3740.00	2.6738	2.659	0.033	0.031	0.003	0.20760
3750.00	2.6667	2.659	0.034	0.031	0.003	0.20760
3760.00	2.6596	2.658	0.034	0.031	0.003	0.20750
3770.00	2.6525	2.657	0.034	0.031	0.003	0.20740
3780.00	2.6455	2.657	0.033	0.031	0.003	0.20740
3790.00	2.6385	2.658	0.033	0.031	0.003	0.20750
3800.00	2.6316	2.659	0.033	0.031	0.003	0.20760
3810.00	2.6247	2.659	0.034	0.031	0.003	0.20760
3820.00	2.6178	2.659	0.034	0.031	0.003	0.20760
3830.00	2.6110	2.659	0.034	0.031	0.003	0.20770
3840.00	2.6042	2.659	0.035	0.031	0.003	0.20770
3850.00	2.5974	2.659	0.035	0.031	0.003	0.20765
3860.00	2.5907	2.659	0.035	0.031	0.003	0.20760
3870.00	2.5840	2.659	0.035	0.031	0.003	0.20760
3880.00	2.5773	2.659	0.035	0.031	0.003	0.20760
3890.00	2.5707	2.659	0.036	0.031	0.003	0.20760
3900.00	2.5641	2.658	0.036	0.031	0.003	0.20755
3910.00	2.5575	2.658	0.036	0.031	0.003	0.20750
3920.00	2.5510	2.658	0.035	0.031	0.003	0.20750
3930.00	2.5445	2.658	0.036	0.031	0.003	0.20750
3940.00	2.5381	2.658	0.036	0.031	0.003	0.20745
3950.00	2.5316	2.657	0.035	0.031	0.003	0.20740
3960.00	2.5253	2.657	0.035	0.031	0.003	0.20740
3970.00	2.5189	2.657	0.034	0.031	0.003	0.20740
3980.00	2.5126	2.658	0.034	0.031	0.003	0.20745
3990.00	2.5063	2.658	0.034	0.031	0.003	0.20750
4000.00	2.5000	2.658	0.034	0.031	0.003	0.20750
4016.06	2.4900	2.658	0.033	0.031	0.003	0.20755
4032.26	2.4800	2.659	0.034	0.031	0.003	0.20765
4048.58	2.4700	2.659	0.034	0.031	0.003	0.20770
4065.04	2.4600	2.660	0.034	0.031	0.003	0.20775
4081.63	2.4500	2.660	0.035	0.031	0.003	0.20775
4098.36	2.4400	2.659	0.035	0.031	0.003	0.20770
4115.23	2.4300	2.659	0.035	0.031	0.003	0.20770
4132.23	2.4200	2.659	0.034	0.031	0.003	0.20770
4149.38	2.4100	2.660	0.034	0.031	0.003	0.20775
4166.67	2.4000	2.660	0.034	0.031	0.003	0.20775

WN	WL	N	K	DN	DK	R
4184.10	2.3900	2.660	0.035	0.031	0.003	0.20775
4201.68	2.3800	2.660	0.034	0.031	0.003	0.20775
4219.41	2.3700	2.660	0.034	0.031	0.003	0.20775
4237.29	2.3600	2.661	0.034	0.031	0.003	0.20785
4255.32	2.3500	2.661	0.034	0.031	0.003	0.20790
4273.50	2.3400	2.661	0.034	0.031	0.003	0.20790
4291.85	2.3300	2.661	0.034	0.031	0.003	0.20790
4310.34	2.3200	2.661	0.034	0.031	0.003	0.20790
4328.00	2.3100	2.661	0.034	0.031	0.003	0.20795
4347.83	2.3000	2.662	0.034	0.031	0.003	0.20800
4366.81	2.2900	2.662	0.034	0.031	0.003	0.20800
4385.96	2.2800	2.662	0.034	0.031	0.003	0.20800
4405.29	2.2700	2.662	0.034	0.031	0.003	0.20800
4424.78	2.2600	2.662	0.034	0.031	0.003	0.20805
4444.44	2.2500	2.662	0.034	0.031	0.003	0.20805
4464.29	2.2400	2.662	0.034	0.031	0.003	0.20805
4484.30	2.2300	2.662	0.034	0.031	0.003	0.20805
4504.50	2.2200	2.662	0.034	0.031	0.003	0.20810
4524.89	2.2100	2.662	0.034	0.031	0.003	0.20810
4545.45	2.2000	2.662	0.034	0.031	0.003	0.20810
4566.21	2.1900	2.662	0.034	0.031	0.003	0.20810
4587.16	2.1800	2.663	0.034	0.031	0.003	0.20815
4608.29	2.1700	2.663	0.034	0.031	0.003	0.20815
4629.63	2.1600	2.663	0.034	0.031	0.003	0.20815
4651.16	2.1500	2.663	0.033	0.031	0.003	0.20815
4672.90	2.1400	2.663	0.033	0.031	0.003	0.20820
4694.84	2.1300	2.663	0.033	0.031	0.003	0.20820
4716.98	2.1200	2.663	0.033	0.031	0.003	0.20820
4739.34	2.1100	2.664	0.033	0.031	0.003	0.20825
4761.90	2.1000	2.664	0.032	0.031	0.003	0.20825
4784.69	2.0900	2.664	0.033	0.031	0.003	0.20830
4807.69	2.0800	2.664	0.033	0.031	0.003	0.20835
4830.92	2.0700	2.664	0.033	0.031	0.003	0.20835
4854.37	2.0600	2.664	0.033	0.031	0.003	0.20835
4878.05	2.0500	2.664	0.032	0.031	0.003	0.20835
4901.96	2.0400	2.665	0.032	0.031	0.003	0.20840
4926.11	2.0300	2.665	0.032	0.031	0.003	0.20840
4950.50	2.0200	2.665	0.032	0.031	0.003	0.20840
4975.12	2.0100	2.665	0.032	0.031	0.003	0.20840
5000.00	2.0000	2.665	0.031	0.031	0.003	0.20845
5025.13	1.9900	2.665	0.031	0.031	0.003	0.20850
5050.51	1.9800	2.666	0.031	0.031	0.002	0.20855
5076.14	1.9700	2.666	0.031	0.031	0.002	0.20860
5102.04	1.9600	2.667	0.031	0.031	0.002	0.20865
5128.21	1.9500	2.667	0.031	0.031	0.003	0.20870
5154.64	1.9400	2.667	0.032	0.031	0.003	0.20870
5181.35	1.9300	2.667	0.032	0.031	0.003	0.20870
5208.33	1.9200	2.667	0.032	0.031	0.003	0.20870
5235.60	1.9100	2.667	0.032	0.031	0.003	0.20870
5263.16	1.9000	2.667	0.032	0.031	0.003	0.20870



WN	WL	N	K	DN	DK	R
5291.01	1.8900	2.666	0.032	0.031	0.003	0.20860
5319.15	1.8800	2.665	0.032	0.031	0.003	0.20840
5347.59	1.8700	2.664	0.031	0.031	0.002	0.20830
5376.34	1.8600	2.664	0.029	0.031	0.002	0.20825
5405.41	1.8500	2.665	0.027	0.031	0.002	0.20840
5434.78	1.8400	2.666	0.026	0.031	0.002	0.20855
5464.48	1.8300	2.667	0.026	0.031	0.002	0.20865
5494.51	1.8200	2.668	0.025	0.031	0.002	0.20880
5524.86	1.8100	2.669	0.025	0.031	0.002	0.20895
5555.56	1.8000	2.670	0.024	0.031	0.002	0.20915
5586.59	1.7900	2.671	0.025	0.031	0.002	0.20930
5617.98	1.7800	2.672	0.026	0.031	0.002	0.20935
5649.72	1.7700	2.671	0.026	0.031	0.002	0.20930
5681.82	1.7600	2.672	0.025	0.031	0.002	0.20935
5714.29	1.7500	2.672	0.025	0.031	0.002	0.20940
5747.13	1.7400	2.673	0.025	0.031	0.002	0.20945
5780.35	1.7300	2.673	0.025	0.031	0.002	0.20950
5813.95	1.7200	2.673	0.025	0.031	0.002	0.20955
5847.95	1.7100	2.674	0.024	0.031	0.002	0.20960
5882.35	1.7000	2.674	0.024	0.031	0.002	0.20970
5917.16	1.6900	2.675	0.024	0.031	0.002	0.20980
5952.38	1.6800	2.676	0.024	0.031	0.002	0.20985
5988.02	1.6700	2.676	0.024	0.031	0.002	0.20990
6024.10	1.6600	2.676	0.024	0.031	0.002	0.20995
6060.61	1.6500	2.677	0.024	0.031	0.002	0.21000
6097.56	1.6400	2.677	0.024	0.031	0.002	0.21000
6134.97	1.6300	2.677	0.024	0.031	0.002	0.21005
6172.84	1.6200	2.677	0.023	0.031	0.002	0.21010
6211.18	1.6100	2.677	0.023	0.031	0.002	0.21010
6250.00	1.6000	2.678	0.022	0.031	0.002	0.21015
6289.31	1.5900	2.679	0.021	0.031	0.002	0.21025
6329.11	1.5800	2.680	0.020	0.031	0.002	0.21040
6369.43	1.5700	2.681	0.020	0.032	0.002	0.21055
6410.26	1.5600	2.682	0.020	0.032	0.002	0.21070
6451.61	1.5500	2.682	0.021	0.032	0.002	0.21075
6493.51	1.5400	2.682	0.021	0.032	0.002	0.21075
6535.95	1.5300	2.683	0.020	0.032	0.002	0.21080
6578.95	1.5200	2.683	0.019	0.032	0.002	0.21090
6622.52	1.5100	2.684	0.019	0.032	0.002	0.21100
6666.67	1.5000	2.685	0.019	0.032	0.001	0.21110
6711.41	1.4900	2.686	0.018	0.032	0.001	0.21120
6756.76	1.4800	2.686	0.018	0.032	0.001	0.21130
6802.72	1.4700	2.687	0.017	0.032	0.001	0.21145
6849.32	1.4600	2.689	0.017	0.032	0.001	0.21160
6896.55	1.4500	2.690	0.017	0.032	0.001	0.21175
6944.44	1.4400	2.691	0.017	0.032	0.001	0.21190
6993.01	1.4300	2.692	0.017	0.032	0.001	0.21200
7042.25	1.4200	2.692	0.017	0.032	0.001	0.21205
7092.20	1.4100	2.693	0.016	0.032	0.001	0.21215
7142.86	1.4000	2.693	0.015	0.032	0.001	0.21225

WN	WL	N	K	DN	DK	R
7194.24	1.3900	2.695	0.015	0.032	0.001	0.21240
7246.38	1.3800	2.696	0.014	0.032	0.001	0.21255
7299.27	1.3700	2.697	0.013	0.032	0.001	0.21275
7352.94	1.3600	2.699	0.013	0.032	0.001	0.21295
7407.41	1.3500	2.700	0.013	0.032	0.001	0.21315
7462.69	1.3400	2.702	0.013	0.032	0.001	0.21335
7518.80	1.3300	2.703	0.013	0.032	0.001	0.21355
7575.76	1.3200	2.704	0.013	0.032	0.001	0.21365
7633.59	1.3100	2.705	0.013	0.032	0.001	0.21380
7692.31	1.3000	2.706	0.012	0.032	0.001	0.21395
7751.94	1.2900	2.708	0.011	0.032	0.001	0.21415
7812.50	1.2800	2.709	0.010	0.032	0.001	0.21440
7874.02	1.2700	2.712	0.010	0.032	0.001	0.21470
7936.51	1.2600	2.714	0.011	0.032	0.001	0.21495
8000.00	1.2500	2.715	0.011	0.032	0.001	0.21520
8064.52	1.2400	2.716	0.011	0.032	0.001	0.21535
8130.08	1.2300	2.718	0.011	0.033	0.001	0.21555
8196.72	1.2200	2.719	0.011	0.033	0.001	0.21575
8264.46	1.2100	2.721	0.011	0.033	0.001	0.21600
8333.33	1.2000	2.723	0.011	0.033	0.001	0.21625
8403.36	1.1900	2.725	0.010	0.033	0.001	0.21645
8474.58	1.1800	2.727	0.010	0.033	0.001	0.21670
8547.01	1.1700	2.729	0.009	0.033	0.001	0.21700
8620.69	1.1600	2.732	0.009	0.033	0.001	0.21740
8695.65	1.1500	2.734	0.010	0.033	0.001	0.21775
8771.93	1.1400	2.737	0.010	0.033	0.001	0.21805
8849.56	1.1300	2.739	0.011	0.033	0.001	0.21830
8928.57	1.1200	2.740	0.011	0.033	0.001	0.21850
9009.01	1.1100	2.742	0.011	0.033	0.001	0.21880
9090.91	1.1000	2.745	0.011	0.033	0.001	0.21910
9174.31	1.0900	2.747	0.011	0.033	0.001	0.21945
9259.26	1.0800	2.750	0.011	0.033	0.001	0.21985
9345.79	1.0700	2.753	0.011	0.034	0.001	0.22020
9433.96	1.0600	2.755	0.011	0.034	0.001	0.22055
9523.81	1.0500	2.759	0.011	0.034	0.001	0.22100
9615.38	1.0400	2.762	0.012	0.034	0.001	0.22145
9708.74	1.0300	2.765	0.013	0.034	0.001	0.22185
9803.92	1.0200	2.768	0.014	0.034	0.001	0.22225
9900.99	1.0100	2.771	0.015	0.034	0.001	0.22265
10000.00	1.0000	2.775	0.015	0.034	0.001	0.22310
10101.01	0.9900	2.778	0.017	0.034	0.001	0.22360
10204.08	0.9800	2.781	0.018	0.034	0.001	0.22400
10309.28	0.9700	2.784	0.020	0.034	0.002	0.22440
10416.67	0.9600	2.787	0.021	0.034	0.002	0.22470
10526.32	0.9500	2.789	0.022	0.035	0.002	0.22500
10638.30	0.9400	2.791	0.023	0.035	0.002	0.22535
10752.69	0.9300	2.794	0.023	0.035	0.002	0.22570
10869.57	0.9200	2.798	0.023	0.035	0.002	0.22615
10989.01	0.9100	2.801	0.024	0.035	0.002	0.22665
11111.11	0.9000	2.805	0.024	0.035	0.002	0.22720

WN	WL	N	K	DN	DK	R
11235.96	0.8900	2.809	0.026	0.035	0.002	0.22765
11363.64	0.8800	2.813	0.026	0.035	0.002	0.22815
11494.23	0.8700	2.816	0.026	0.035	0.002	0.22860
11627.91	0.8600	2.820	0.027	0.035	0.002	0.22910
11764.71	0.8500	2.824	0.027	0.036	0.002	0.22965
11904.76	0.8400	2.828	0.026	0.036	0.002	0.23020
12048.19	0.8300	2.833	0.025	0.036	0.002	0.23085
12195.12	0.8200	2.838	0.024	0.036	0.002	0.23150
12345.68	0.8100	2.845	0.022	0.036	0.002	0.23235
12500.00	0.8000	2.853	0.020	0.036	0.002	0.23340
12658.23	0.7900	2.862	0.019	0.037	0.002	0.23460
12820.51	0.7800	2.872	0.019	0.037	0.002	0.23585
12987.01	0.7700	2.882	0.020	0.037	0.002	0.23710
13157.89	0.7600	2.892	0.020	0.038	0.002	0.23845
13333.33	0.7500	2.903	0.021	0.038	0.002	0.23990
13513.51	0.7400	2.916	0.022	0.038	0.002	0.24150
13698.63	0.7300	2.929	0.024	0.039	0.002	0.24315
13888.89	0.7200	2.942	0.026	0.039	0.002	0.24490
14084.51	0.7100	2.956	0.028	0.039	0.002	0.24670
14285.71	0.7000	2.972	0.031	0.040	0.003	0.24870
14492.75	0.6900	2.990	0.034	0.040	0.003	0.25090
14705.88	0.6800	3.008	0.038	0.041	0.003	0.25325
14925.37	0.6700	3.029	0.043	0.042	0.004	0.25590
15151.52	0.6600	3.051	0.051	0.042	0.004	0.25865
15384.62	0.6500	3.074	0.057	0.043	0.005	0.26150
15625.00	0.6400	3.102	0.065	0.044	0.005	0.26490
15873.02	0.6300	3.135	0.073	0.045	0.006	0.26900
16129.03	0.6200	3.175	0.089	0.047	0.008	0.27390
16393.44	0.6100	3.216	0.114	0.048	0.010	0.27925
16666.67	0.6000	3.265	0.149	0.050	0.013	0.28520
16949.15	0.5900	3.312	0.202	0.052	0.017	0.29130
17241.38	0.5800	3.348	0.274	0.054	0.024	0.29665
17543.86	0.5700	3.361	0.357	0.056	0.031	0.30010
17857.14	0.5600	3.348	0.437	0.058	0.037	0.30095
18181.82	0.5500	3.318	0.498	0.058	0.042	0.29980
18518.52	0.5400	3.286	0.538	0.058	0.045	0.29790
18867.92	0.5300	3.266	0.564	0.059	0.047	0.29670
19230.77	0.5200	3.262	0.587	0.059	0.048	0.29735
19607.84	0.5100	3.272	0.622	0.061	0.051	0.30000
20000.00	0.5000	3.282	0.675	0.063	0.055	0.30365
20408.16	0.4900	3.280	0.741	0.065	0.060	0.30690
20833.33	0.4800	3.264	0.809	0.068	0.064	0.30915
21276.60	0.4700	3.242	0.874	0.070	0.068	0.31100
21739.13	0.4600	3.217	0.943	0.072	0.072	0.31315
22222.22	0.4500	3.181	1.020	0.075	0.076	0.31535
22727.27	0.4400	3.126	1.101	0.078	0.079	0.31665
23255.81	0.4300	3.052	1.173	0.080	0.080	0.31620
23809.52	0.4200	2.962	1.231	0.082	0.080	0.31395
24390.24	0.4100	2.863	1.271	0.083	0.079	0.30990
25000.00	0.4000	2.756	1.294	0.082	0.076	0.30375

WN	WL	N	K	DN	DK	R
25641.03	0.3900	2.645	1.291	0.081	0.072	0.29475
26315.79	0.3800	2.545	1.258	0.078	0.068	0.28280
27027.03	0.3700	2.470	1.202	0.074	0.064	0.26965
27777.78	0.3600	2.433	1.140	0.070	0.062	0.25845
28571.43	0.3500	2.430	1.093	0.067	0.061	0.25225
29411.76	0.3400	2.450	1.085	0.067	0.061	0.25300
30303.03	0.3300	2.454	1.122	0.069	0.062	0.25800
31250.00	0.3200	2.416	1.169	0.072	0.062	0.26090
32258.06	0.3100	2.357	1.195	0.073	0.060	0.25975
33333.33	0.3000	2.307	1.206	0.073	0.058	0.25775
34482.76	0.2900	2.261	1.233	0.074	0.057	0.25820
35714.29	0.2800	2.197	1.270	0.076	0.054	0.25960
37037.04	0.2700	2.110	1.300	0.077	0.050	0.25950
38461.54	0.2600	2.007	1.317	0.077	0.044	0.25730
40000.00	0.2500	1.899	1.315	0.077	0.038	0.25270
41666.67	0.2400	1.790	1.309	0.076	0.031	0.24840
43478.26	0.2300	1.659	1.309	0.075	0.023	0.24695
45454.55	0.2200	1.471	1.291	0.077	0.029	0.24550
47619.05	0.2100	1.202	1.207	0.075	0.039	0.23995

### 5.5 Magnetite ( $\text{Fe}_3\text{O}_4$ )

The measured reflectance spectrum and computed values of  $n$  and  $k$  for magnetite are presented in Figs. 35-38. At 589nm wavelength Troger<sup>2</sup> gives the refractive index of magnetite as  $n = 2.42$  and we get  $n = 2.34 \pm 0.01$  at 590nm. The difference between our value and Troger's value of  $n$  is probably due to the incident sample beam in the Varian instrument being mostly p-polarized at 590nm and our algorithm for computing  $n$  uses equations for s-polarization. The angle of incidence for our reflectance measurements was about 6.5 degrees. We are thus obtaining reflectance spectra for these materials that are sensitive to the difference between p- and s-polarized radiant flux incident and reflected at 6.5 degrees from an optically isotropic material.

The measured reflectance and computed values of  $n$  and  $k$  are also presented in tabular form in the following pages. The first derivative of the infrared reflectance spectrum of magnetite is presented in Fig. 39. Note the distinct minima and maxima corresponding to  $L_0$  and  $T_0$  modes, respectively.

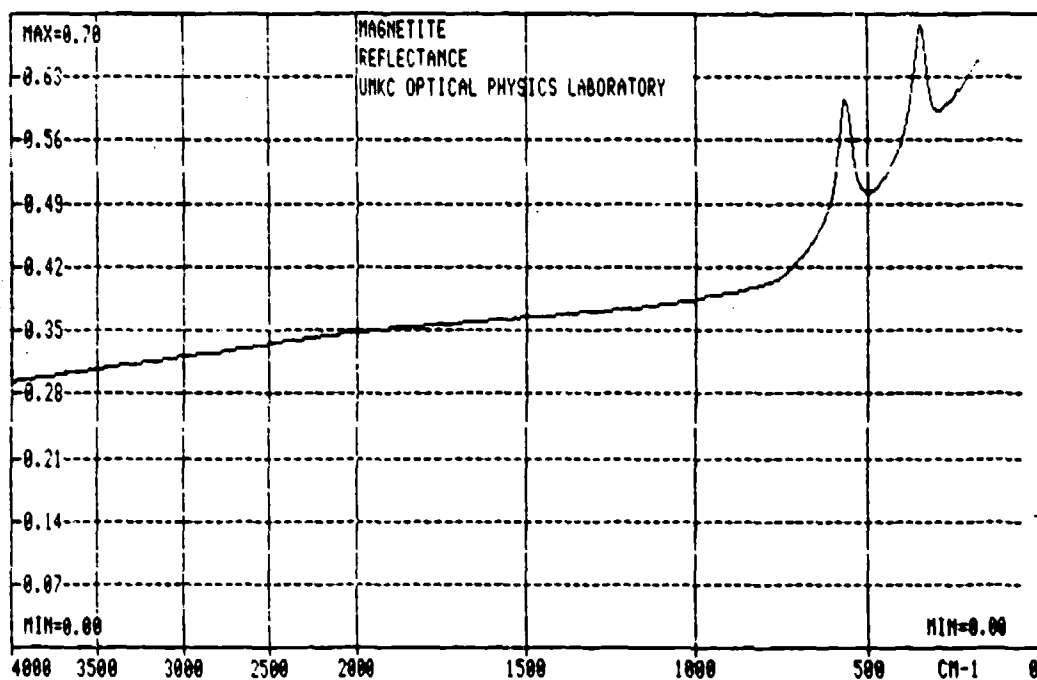


Figure 35. The infrared (4,000-180  $\text{cm}^{-1}$ ) reflectance spectrum of magnetite ( $\text{Fe}_3\text{O}_4$ ).

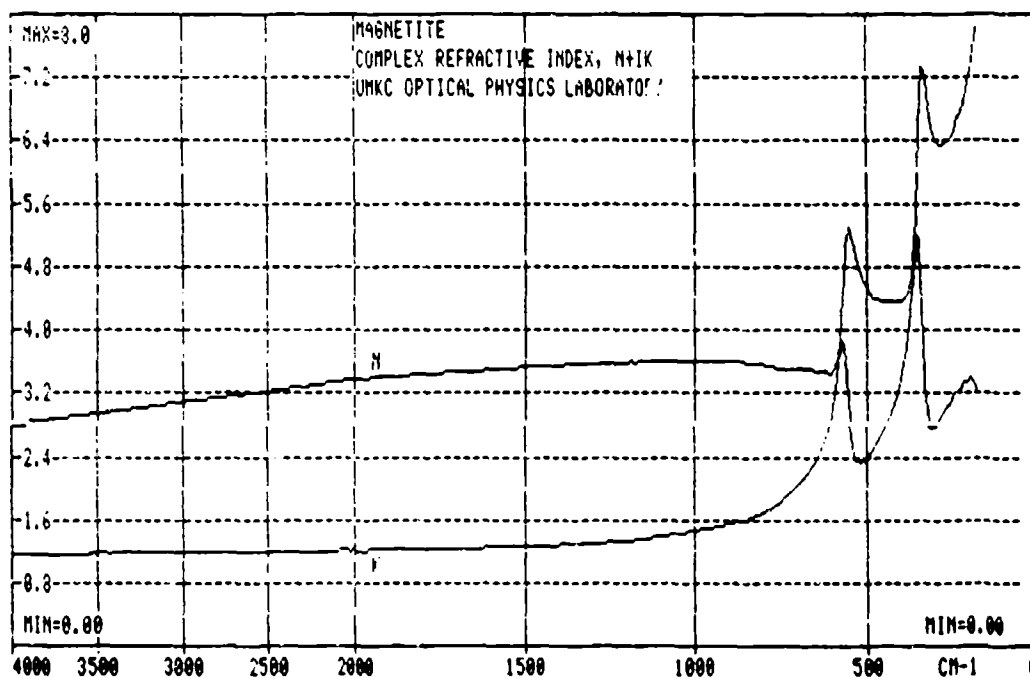


Figure 36. The infrared (4,000-180  $\text{cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for magnetite ( $\text{Fe}_3\text{O}_4$ ).

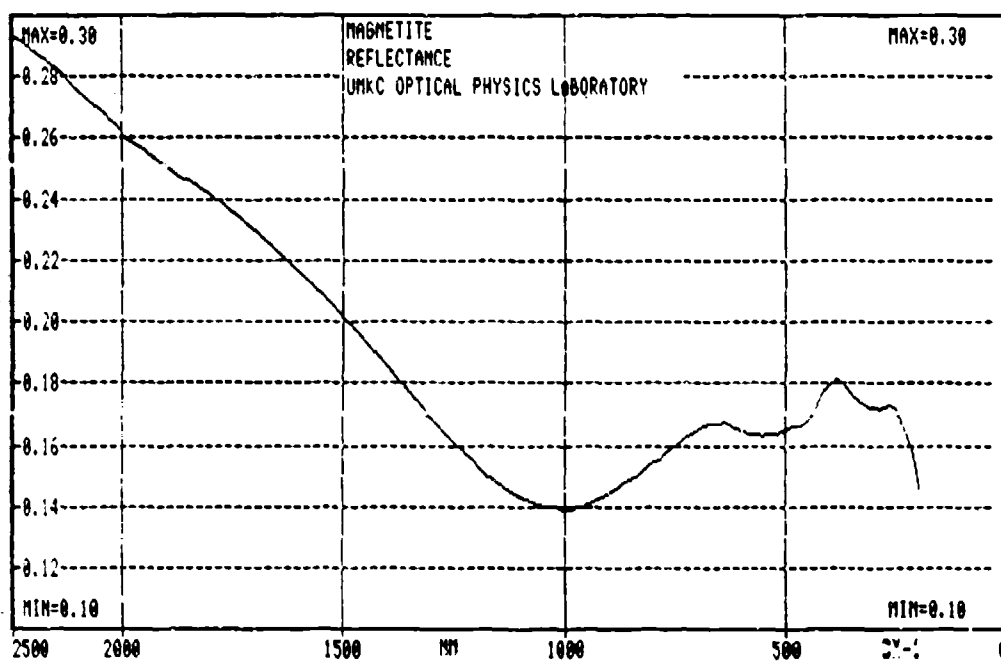


Figure 37. The uv-vis-nir (2,500–200 nm) reflectance spectrum of magnetite ( $\text{Fe}_3\text{O}_4$ ).

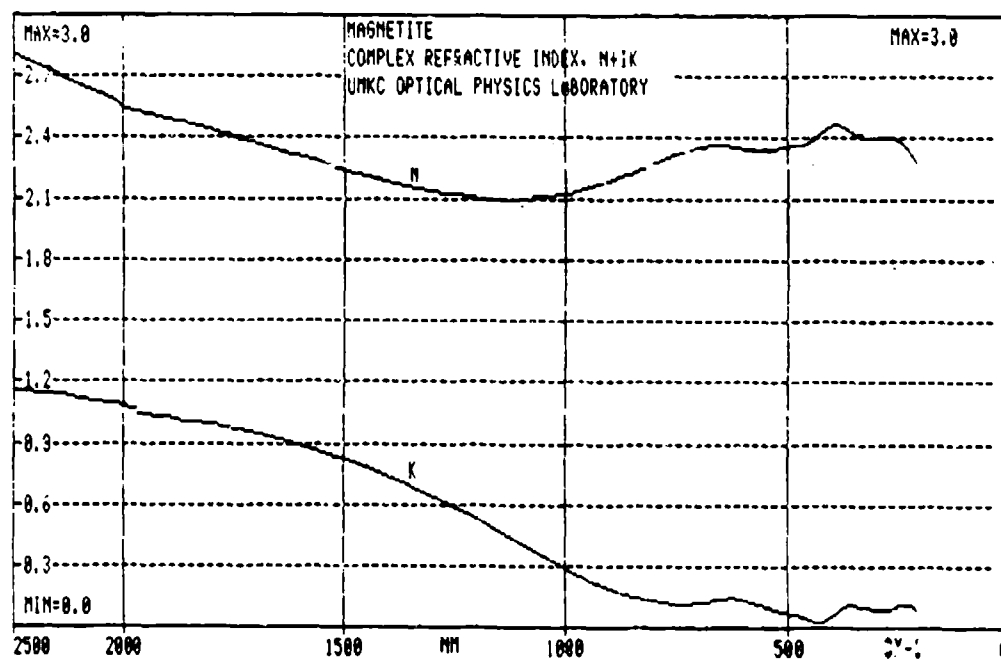


Figure 38. The uv-vis-nir (2,500–210 nm) complex refractive indices  $n$  and  $k$  for magnetite ( $\text{Fe}_3\text{O}_4$ ).

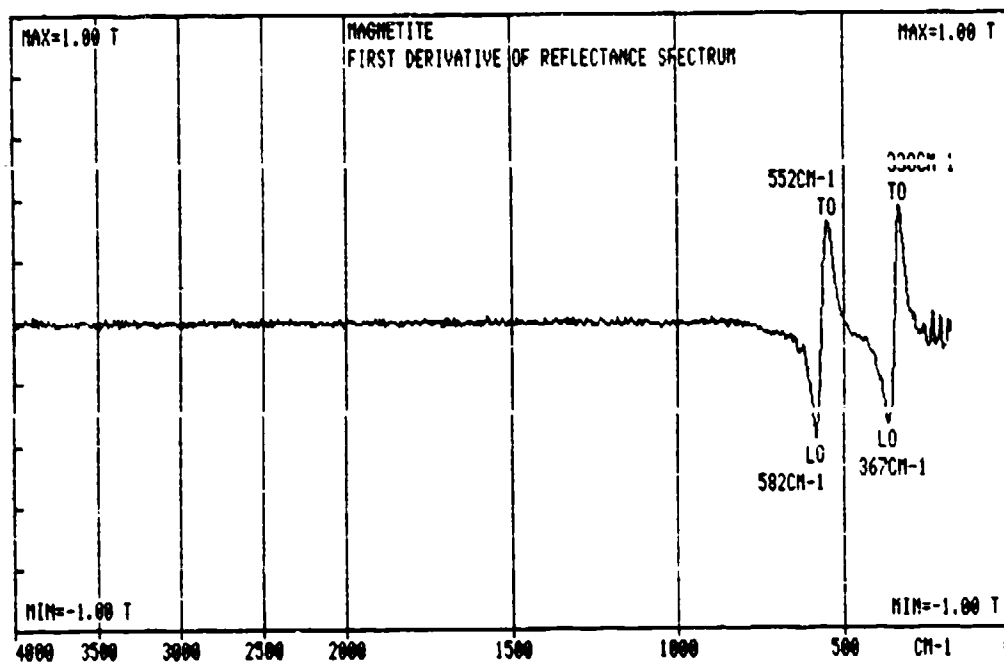


Figure 39. The first derivative of the infrared reflectance spectrum of magnetite ( $\text{Fe}_3\text{O}_4$ ).



WN	WL	N	K	DN	DK	R
180.00	55.5556	7.943	3.209	0.168	0.158	0.64985
190.00	52.6316	7.679	3.351	0.145	0.154	0.64695
200.00	50.0000	7.341	3.400	0.132	0.149	0.63992
210.00	47.6190	7.124	3.331	0.125	0.142	0.63227
220.00	45.4545	6.933	3.357	0.118	0.139	0.62813
230.00	43.4783	6.738	3.253	0.112	0.132	0.61938
240.00	41.6667	6.677	3.226	0.110	0.130	0.61675
250.00	40.0000	6.485	3.185	0.105	0.125	0.60992
260.00	38.4615	6.416	3.058	0.103	0.119	0.60314
270.00	37.0370	6.381	3.017	0.102	0.117	0.60055
280.00	35.7143	6.329	2.950	0.101	0.114	0.59637
290.00	34.4828	6.342	2.858	0.101	0.111	0.59333
300.00	33.3333	6.418	2.807	0.104	0.111	0.59388
310.00	32.2581	6.567	2.776	0.108	0.112	0.59764
320.00	31.2500	6.871	2.855	0.118	0.120	0.60990
330.00	30.3030	7.272	3.268	0.130	0.143	0.63414
340.00	29.4118	7.376	4.290	0.127	0.182	0.66858
350.00	28.5714	6.308	5.210	0.082	0.177	0.68842
360.00	27.7778	5.167	4.940	0.054	0.131	0.67070
370.00	27.0270	4.668	4.392	0.049	0.106	0.63873
380.00	26.3158	4.484	3.958	0.049	0.094	0.60981
390.00	25.6410	4.409	3.655	0.050	0.088	0.58819
400.00	25.0000	4.365	3.413	0.050	0.083	0.57024
410.00	24.3902	4.361	3.224	0.051	0.080	0.55634
420.00	23.8095	4.362	3.078	0.052	0.078	0.54566
430.00	23.2558	4.372	2.959	0.052	0.076	0.53721
440.00	22.7273	4.371	2.867	0.052	0.075	0.53052
450.00	22.2222	4.373	2.776	0.053	0.073	0.52394
460.00	21.7391	4.380	2.694	0.053	0.072	0.51822
470.00	21.2766	4.391	2.614	0.053	0.070	0.51288
480.00	20.8333	4.413	2.535	0.053	0.069	0.50817
490.00	20.4082	4.456	2.460	0.054	0.069	0.50463
500.00	20.0000	4.524	2.402	0.056	0.068	0.50348
510.00	19.6078	4.613	2.365	0.057	0.069	0.50488
520.00	19.2308	4.731	2.348	0.060	0.071	0.50888
530.00	18.8679	4.902	2.383	0.064	0.074	0.51819
540.00	18.5185	5.131	2.540	0.069	0.082	0.53611
550.00	18.1818	5.314	2.966	0.073	0.096	0.56527
560.00	17.8571	5.091	3.604	0.065	0.105	0.59547
570.00	17.5439	4.372	3.907	0.047	0.090	0.60564
580.00	17.2414	3.755	3.642	0.038	0.070	0.58338
590.00	16.9492	3.514	3.249	0.035	0.059	0.54777
600.00	16.6667	3.455	2.963	0.036	0.055	0.51946
610.00	16.3934	3.454	2.761	0.036	0.053	0.49912
620.00	16.1290	3.474	2.626	0.037	0.053	0.48594
630.00	15.8730	3.470	2.530	0.037	0.051	0.47613
640.00	15.6250	3.468	2.427	0.037	0.050	0.46572
650.00	15.3846	3.484	2.348	0.037	0.050	0.45839
660.00	15.1515	3.492	2.284	0.037	0.049	0.45227
670.00	14.9254	3.494	2.228	0.037	0.048	0.44683

WN	WL	N	K	DN	DK	R
680.00	14.7059	3.497	2.176	0.037	0.048	0.44186
690.00	14.4928	3.492	2.129	0.037	0.047	0.43704
700.00	14.2857	3.492	2.077	0.037	0.046	0.43200
710.00	14.0845	3.493	2.033	0.037	0.045	0.42787
720.00	13.8889	3.491	1.991	0.036	0.045	0.42371
730.00	13.6986	3.489	1.947	0.036	0.044	0.41944
740.00	13.5135	3.491	1.903	0.036	0.043	0.41538
750.00	13.3333	3.499	1.859	0.036	0.043	0.41172
760.00	13.1579	3.509	1.821	0.036	0.042	0.40879
770.00	12.9870	3.522	1.787	0.036	0.042	0.40646
780.00	12.8205	3.533	1.760	0.036	0.042	0.40474
790.00	12.6582	3.546	1.735	0.036	0.041	0.40327
800.00	12.5000	3.554	1.715	0.036	0.041	0.40209
810.00	12.3457	3.561	1.693	0.036	0.041	0.40062
820.00	12.1951	3.569	1.677	0.036	0.041	0.39968
830.00	12.0482	3.571	1.660	0.036	0.040	0.39838
840.00	11.9048	3.577	1.641	0.036	0.040	0.39713
850.00	11.7647	3.582	1.627	0.036	0.040	0.39633
860.00	11.6279	3.587	1.609	0.036	0.040	0.39513
870.00	11.4943	3.595	1.595	0.037	0.040	0.39457
880.00	11.3636	3.598	1.586	0.037	0.039	0.39399
890.00	11.2360	3.599	1.573	0.036	0.039	0.39301
900.00	11.1111	3.605	1.563	0.037	0.039	0.39259
910.00	10.9890	3.604	1.554	0.036	0.039	0.39181
920.00	10.8696	3.606	1.542	0.036	0.039	0.39096
930.00	10.7527	3.609	1.532	0.036	0.038	0.39039
940.00	10.6383	3.612	1.525	0.036	0.038	0.39004
950.00	10.5263	3.609	1.518	0.036	0.038	0.38931
960.00	10.4167	3.609	1.510	0.036	0.038	0.38867
970.00	10.3093	3.607	1.502	0.036	0.038	0.38787
980.00	10.2041	3.606	1.493	0.036	0.038	0.38707
990.00	10.1010	3.606	1.485	0.036	0.038	0.38651
1000.00	10.0000	3.601	1.479	0.036	0.037	0.38563
1010.00	9.9010	3.601	1.464	0.036	0.037	0.38450
1020.00	9.8039	3.603	1.460	0.036	0.037	0.38436
1030.00	9.7087	3.603	1.453	0.036	0.037	0.38378
1040.00	9.6154	3.601	1.451	0.036	0.037	0.38351
1050.00	9.5238	3.592	1.442	0.036	0.037	0.38212
1060.00	9.4340	3.593	1.431	0.036	0.036	0.38136
1070.00	9.3458	3.592	1.424	0.036	0.036	0.38077
1080.00	9.2593	3.589	1.415	0.036	0.036	0.37983
1090.00	9.1743	3.592	1.405	0.036	0.036	0.37930
1100.00	9.0909	3.594	1.403	0.036	0.036	0.37931
1110.00	9.0090	3.590	1.397	0.035	0.036	0.37857
1120.00	8.9286	3.588	1.392	0.035	0.035	0.37801
1130.00	8.8496	3.587	1.381	0.035	0.035	0.37713
1140.00	8.7719	3.590	1.378	0.035	0.035	0.37711
1150.00	8.6957	3.587	1.374	0.035	0.035	0.37659
1160.00	8.6207	3.587	1.370	0.035	0.035	0.37622
1170.00	8.5470	3.582	1.363	0.035	0.035	0.37543

WN	WL	N	K	DN	DK	R
1180.00	8.4746	3.585	1.356	0.035	0.035	0.37511
1190.00	8.4034	3.585	1.354	0.035	0.035	0.37499
1200.00	8.3333	3.583	1.352	0.035	0.035	0.37461
1210.00	8.2645	3.579	1.346	0.035	0.034	0.37392
1220.00	8.1967	3.580	1.340	0.035	0.034	0.37348
1230.00	8.1301	3.582	1.338	0.035	0.034	0.37353
1240.00	8.0645	3.577	1.338	0.035	0.034	0.37318
1250.00	8.0000	3.574	1.331	0.035	0.034	0.37237
1260.00	7.9365	3.574	1.327	0.035	0.034	0.37204
1270.00	7.8740	3.574	1.324	0.035	0.034	0.37183
1280.00	7.8125	3.572	1.324	0.035	0.034	0.37177
1290.00	7.7519	3.569	1.319	0.035	0.034	0.37111
1300.00	7.6923	3.568	1.315	0.035	0.034	0.37070
1310.00	7.6336	3.567	1.312	0.035	0.034	0.37042
1320.00	7.5758	3.565	1.309	0.035	0.034	0.37012
1330.00	7.5188	3.567	1.307	0.035	0.034	0.37007
1340.00	7.4627	3.563	1.307	0.035	0.033	0.36974
1350.00	7.4074	3.563	1.305	0.035	0.033	0.36954
1360.00	7.3529	3.559	1.303	0.034	0.033	0.36911
1370.00	7.2993	3.558	1.304	0.034	0.033	0.36907
1380.00	7.2464	3.552	1.301	0.034	0.033	0.36841
1390.00	7.1942	3.550	1.298	0.034	0.033	0.36806
1400.00	7.1429	3.549	1.294	0.034	0.033	0.36767
1410.00	7.0922	3.548	1.293	0.034	0.033	0.36750
1420.00	7.0423	3.544	1.291	0.034	0.033	0.36709
1430.00	6.9930	3.543	1.290	0.034	0.033	0.36689
1440.00	6.9444	3.541	1.289	0.034	0.033	0.36668
1450.00	6.8966	3.536	1.290	0.034	0.033	0.36636
1460.00	6.8493	3.532	1.284	0.034	0.033	0.36559
1470.00	6.8027	3.532	1.282	0.034	0.033	0.36551
1480.00	6.7568	3.530	1.280	0.034	0.033	0.36514
1490.00	6.7114	3.528	1.282	0.034	0.033	0.36510
1500.00	6.6667	3.524	1.279	0.034	0.033	0.36458
1510.00	6.6225	3.524	1.279	0.034	0.033	0.36458
1520.00	6.5789	3.518	1.277	0.034	0.032	0.36397
1530.00	6.5359	3.520	1.276	0.034	0.032	0.36403
1540.00	6.4935	3.512	1.278	0.034	0.032	0.36352
1550.00	6.4516	3.507	1.273	0.033	0.032	0.36278
1560.00	6.4103	3.505	1.270	0.033	0.032	0.36236
1570.00	6.3694	3.506	1.268	0.033	0.032	0.36230
1580.00	6.3291	3.503	1.270	0.033	0.032	0.36219
1590.00	6.2893	3.500	1.269	0.033	0.032	0.36197
1600.00	6.2500	3.496	1.270	0.033	0.032	0.36164
1610.00	6.2112	3.491	1.267	0.033	0.032	0.36101
1620.00	6.1728	3.488	1.263	0.033	0.032	0.36053
1630.00	6.1350	3.487	1.263	0.033	0.032	0.36041
1640.00	6.0976	3.483	1.261	0.033	0.032	0.35997
1650.00	6.0606	3.479	1.261	0.033	0.032	0.35967
1660.00	6.0241	3.479	1.257	0.033	0.032	0.35932
1670.00	5.9880	3.476	1.260	0.033	0.032	0.35927

WN	WL	N	K	DN	DK	R
1680.00	5.9524	3.471	1.258	0.033	0.032	0.35872
1690.00	5.9172	3.471	1.256	0.033	0.032	0.35861
1700.00	5.8824	3.466	1.259	0.033	0.032	0.35842
1710.00	5.8480	3.463	1.255	0.033	0.032	0.35780
1720.00	5.8140	3.459	1.253	0.033	0.031	0.35740
1730.00	5.7803	3.459	1.252	0.033	0.031	0.35731
1740.00	5.7471	3.456	1.254	0.033	0.031	0.35720
1750.00	5.7143	3.452	1.253	0.032	0.031	0.35678
1760.00	5.6818	3.447	1.251	0.032	0.031	0.35626
1770.00	5.6497	3.443	1.250	0.032	0.031	0.35591
1780.00	5.6180	3.441	1.247	0.032	0.031	0.35544
1790.00	5.5866	3.440	1.247	0.032	0.031	0.35539
1800.00	5.5556	3.435	1.246	0.032	0.031	0.35490
1810.00	5.5249	3.432	1.245	0.032	0.031	0.35459
1820.00	5.4945	3.430	1.244	0.032	0.031	0.35438
1830.00	5.4645	3.426	1.244	0.032	0.031	0.35400
1840.00	5.4348	3.422	1.243	0.032	0.031	0.35364
1850.00	5.4054	3.419	1.239	0.032	0.031	0.35311
1860.00	5.3763	3.420	1.240	0.032	0.031	0.35320
1870.00	5.3476	3.415	1.240	0.032	0.031	0.35283
1880.00	5.3191	3.411	1.239	0.032	0.031	0.35232
1890.00	5.2910	3.410	1.236	0.032	0.031	0.35205
1900.00	5.2632	3.409	1.238	0.032	0.031	0.35212
1910.00	5.2356	3.404	1.237	0.032	0.031	0.35161
1920.00	5.2083	3.401	1.236	0.032	0.031	0.35129
1930.00	5.1813	3.397	1.234	0.032	0.031	0.35087
1940.00	5.1546	3.395	1.234	0.032	0.031	0.35071
1950.00	5.1282	3.393	1.234	0.031	0.031	0.35052
1960.00	5.1020	3.388	1.232	0.031	0.030	0.34995
1970.00	5.0761	3.387	1.228	0.031	0.030	0.34949
1980.00	5.0505	3.386	1.227	0.031	0.030	0.34945
1990.00	5.0251	3.386	1.226	0.031	0.030	0.34931
2000.00	5.0000	3.388	1.231	0.031	0.030	0.34984
2010.00	4.9751	3.382	1.234	0.031	0.030	0.34962
2020.00	4.9505	3.377	1.232	0.031	0.030	0.34901
2030.00	4.9261	3.375	1.231	0.031	0.030	0.34876
2040.00	4.9020	3.373	1.234	0.031	0.030	0.34889
2050.00	4.8780	3.369	1.235	0.031	0.030	0.34858
2060.00	4.8544	3.366	1.235	0.031	0.030	0.34833
2070.00	4.8309	3.360	1.236	0.031	0.030	0.34789
2080.00	4.8077	3.357	1.236	0.031	0.030	0.34764
2090.00	4.7847	3.351	1.236	0.031	0.030	0.34717
2100.00	4.7619	3.346	1.233	0.031	0.030	0.34650
2110.00	4.7393	3.345	1.230	0.031	0.030	0.34616
2120.00	4.7170	3.344	1.232	0.031	0.030	0.34624
2130.00	4.6948	3.338	1.231	0.031	0.030	0.34563
2140.00	4.6729	3.337	1.229	0.031	0.030	0.34540
2150.00	4.6512	3.333	1.230	0.031	0.030	0.34517
2160.00	4.6296	3.330	1.228	0.031	0.030	0.34477
2170.00	4.6083	3.330	1.229	0.031	0.030	0.34485

WN	WL	N	K	DN	DK	R
2180.00	4.5872	3.324	1.231	0.030	0.030	0.34449
2190.00	4.5662	3.318	1.229	0.030	0.030	0.34387
2200.00	4.5455	3.317	1.227	0.030	0.030	0.34361
2210.00	4.5249	3.314	1.228	0.030	0.030	0.34348
2220.00	4.5045	3.308	1.225	0.030	0.030	0.34277
2230.00	4.4843	3.308	1.224	0.030	0.030	0.34262
2240.00	4.4643	3.306	1.227	0.030	0.030	0.34266
2250.00	4.4444	3.300	1.225	0.030	0.030	0.34199
2260.00	4.4248	3.299	1.223	0.030	0.030	0.34176
2270.00	4.4053	3.295	1.224	0.030	0.030	0.34148
2280.00	4.3860	3.293	1.220	0.030	0.029	0.34107
2290.00	4.3668	3.292	1.223	0.030	0.030	0.34125
2300.00	4.3478	3.287	1.224	0.030	0.029	0.34080
2310.00	4.3290	3.285	1.221	0.030	0.029	0.34041
2320.00	4.3103	3.285	1.222	0.030	0.029	0.34052
2330.00	4.2918	3.280	1.223	0.030	0.029	0.34014
2340.00	4.2735	3.279	1.222	0.030	0.029	0.34004
2350.00	4.2553	3.273	1.226	0.030	0.029	0.33987
2360.00	4.2373	3.269	1.223	0.030	0.029	0.33928
2370.00	4.2194	3.268	1.225	0.030	0.029	0.33929
2380.00	4.2017	3.260	1.224	0.029	0.029	0.33858
2390.00	4.1841	3.256	1.219	0.029	0.029	0.33786
2400.00	4.1667	3.255	1.219	0.029	0.029	0.33774
2410.00	4.1494	3.253	1.220	0.029	0.029	0.33767
2420.00	4.1322	3.249	1.221	0.029	0.029	0.33743
2430.00	4.1152	3.247	1.218	0.029	0.029	0.33705
2440.00	4.0984	3.245	1.221	0.029	0.029	0.33708
2450.00	4.0816	3.239	1.219	0.029	0.029	0.33639
2460.00	4.0650	3.238	1.220	0.029	0.029	0.33641
2470.00	4.0486	3.233	1.219	0.029	0.029	0.33588
2480.00	4.0323	3.232	1.219	0.029	0.029	0.33576
2490.00	4.0161	3.226	1.219	0.029	0.029	0.33528
2500.00	4.0000	3.221	1.215	0.029	0.029	0.33456
2510.00	3.9841	3.220	1.214	0.029	0.029	0.33430
2520.00	3.9683	3.219	1.215	0.029	0.029	0.33434
2530.00	3.9526	3.216	1.216	0.029	0.029	0.33418
2540.00	3.9370	3.213	1.212	0.029	0.029	0.33359
2550.00	3.9216	3.211	1.212	0.029	0.029	0.33341
2560.00	3.9063	3.208	1.212	0.029	0.029	0.33319
2570.00	3.8911	3.207	1.215	0.029	0.029	0.33336
2580.00	3.8760	3.200	1.219	0.029	0.029	0.33309
2590.00	3.8610	3.196	1.213	0.028	0.029	0.33218
2600.00	3.8462	3.194	1.211	0.028	0.028	0.33191
2610.00	3.8314	3.193	1.209	0.028	0.028	0.33161
2620.00	3.8168	3.193	1.211	0.028	0.028	0.33181
2630.00	3.8023	3.188	1.215	0.028	0.028	0.33174
2640.00	3.7879	3.182	1.213	0.028	0.028	0.33104
2650.00	3.7736	3.180	1.213	0.028	0.028	0.33084
2660.00	3.7594	3.175	1.212	0.028	0.028	0.33032
2670.00	3.7453	3.173	1.207	0.028	0.028	0.32979

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.171	1.210	0.028	0.028	0.32989
2690.00	3.7175	3.168	1.210	0.028	0.028	0.32957
2700.00	3.7037	3.163	1.210	0.028	0.028	0.32914
2710.00	3.6900	3.161	1.206	0.028	0.028	0.32861
2720.00	3.6765	3.159	1.209	0.028	0.028	0.32869
2730.00	3.6630	3.153	1.205	0.028	0.028	0.32783
2740.00	3.6496	3.153	1.204	0.028	0.028	0.32777
2750.00	3.6364	3.151	1.203	0.028	0.028	0.32752
2760.00	3.6232	3.152	1.203	0.028	0.028	0.32757
2770.00	3.6101	3.148	1.208	0.028	0.028	0.32773
2780.00	3.5971	3.139	1.206	0.028	0.028	0.32673
2790.00	3.5842	3.137	1.202	0.028	0.028	0.32626
2800.00	3.5714	3.137	1.200	0.028	0.028	0.32608
2810.00	3.5587	3.135	1.201	0.028	0.028	0.32605
2820.00	3.5461	3.132	1.202	0.028	0.028	0.32579
2830.00	3.5336	3.129	1.201	0.027	0.028	0.32543
2840.00	3.5211	3.127	1.201	0.027	0.028	0.32530
2850.00	3.5088	3.125	1.202	0.027	0.028	0.32518
2860.00	3.4965	3.123	1.202	0.027	0.028	0.32501
2870.00	3.4843	3.118	1.201	0.027	0.028	0.32488
2880.00	3.4722	3.117	1.200	0.027	0.028	0.32427
2890.00	3.4602	3.114	1.200	0.027	0.028	0.32403
2900.00	3.4483	3.112	1.197	0.027	0.028	0.32368
2910.00	3.4364	3.113	1.199	0.027	0.028	0.32394
2920.00	3.4247	3.107	1.205	0.027	0.028	0.32392
2930.00	3.4130	3.101	1.201	0.027	0.027	0.32302
2940.00	3.4014	3.101	1.201	0.027	0.027	0.32303
2950.00	3.3898	3.097	1.201	0.027	0.027	0.32273
2960.00	3.3784	3.094	1.201	0.027	0.027	0.32239
2970.00	3.3670	3.093	1.198	0.027	0.027	0.32208
2980.00	3.3557	3.090	1.202	0.027	0.027	0.32218
2990.00	3.3445	3.084	1.198	0.027	0.027	0.32131
3000.00	3.3333	3.085	1.199	0.027	0.027	0.32153
3010.00	3.3223	3.080	1.203	0.027	0.027	0.32144
3020.00	3.3113	3.074	1.200	0.027	0.027	0.32063
3030.00	3.3003	3.075	1.199	0.027	0.027	0.32059
3040.00	3.2895	3.067	1.199	0.027	0.027	0.31989
3050.00	3.2787	3.066	1.195	0.027	0.027	0.31945
3060.00	3.2680	3.065	1.196	0.027	0.027	0.31948
3070.00	3.2573	3.063	1.195	0.027	0.027	0.31927
3080.00	3.2468	3.062	1.194	0.027	0.027	0.31909
3090.00	3.2362	3.060	1.198	0.027	0.027	0.31926
3100.00	3.2258	3.055	1.198	0.026	0.027	0.31873
3110.00	3.2154	3.050	1.199	0.026	0.027	0.31843
3120.00	3.2051	3.046	1.197	0.026	0.027	0.31794
3130.00	3.1949	3.044	1.197	0.026	0.027	0.31779
3140.00	3.1847	3.040	1.196	0.026	0.027	0.31731
3150.00	3.1746	3.037	1.192	0.026	0.027	0.31667
3160.00	3.1646	3.039	1.191	0.026	0.027	0.31674
3170.00	3.1546	3.037	1.194	0.026	0.027	0.31686

WN	WL	N	K	DN	DK	R
3180.00	3.1447	3.033	1.195	0.026	0.027	0.31659
3190.00	3.1348	3.029	1.194	0.026	0.027	0.31620
3200.00	3.1250	3.025	1.193	0.026	0.027	0.31569
3210.00	3.1153	3.024	1.191	0.026	0.027	0.31552
3220.00	3.1056	3.021	1.193	0.026	0.027	0.31543
3230.00	3.0960	3.018	1.193	0.026	0.027	0.31510
3240.00	3.0864	3.016	1.192	0.026	0.027	0.31484
3250.00	3.0769	3.013	1.195	0.026	0.027	0.31489
3260.00	3.0675	3.007	1.191	0.026	0.027	0.31401
3270.00	3.0581	3.007	1.190	0.026	0.027	0.31397
3280.00	3.0488	3.004	1.190	0.026	0.026	0.31368
3290.00	3.0395	3.003	1.191	0.026	0.026	0.31358
3300.00	3.0303	2.998	1.193	0.026	0.026	0.31337
3310.00	3.0211	2.993	1.190	0.026	0.026	0.31267
3320.00	3.0120	2.992	1.187	0.026	0.026	0.31226
3330.00	3.0030	2.993	1.188	0.026	0.026	0.31247
3340.00	2.9940	2.988	1.190	0.026	0.026	0.31226
3350.00	2.9851	2.986	1.189	0.026	0.026	0.31177
3360.00	2.9762	2.982	1.190	0.025	0.026	0.31172
3370.00	2.9674	2.979	1.189	0.025	0.026	0.31132
3380.00	2.9586	2.973	1.188	0.025	0.026	0.31082
3390.00	2.9499	2.971	1.185	0.025	0.026	0.31028
3400.00	2.9412	2.971	1.187	0.025	0.026	0.31052
3410.00	2.9326	2.967	1.186	0.025	0.026	0.31004
3420.00	2.9240	2.965	1.186	0.025	0.026	0.30986
3430.00	2.9155	2.960	1.185	0.025	0.026	0.30938
3440.00	2.9070	2.960	1.182	0.025	0.026	0.30902
3450.00	2.8986	2.961	1.186	0.025	0.026	0.30946
3460.00	2.8902	2.955	1.187	0.025	0.026	0.30912
3470.00	2.8818	2.952	1.187	0.025	0.026	0.30878
3480.00	2.8736	2.947	1.185	0.025	0.026	0.30817
3490.00	2.8653	2.945	1.185	0.025	0.026	0.30799
3500.00	2.8571	2.943	1.183	0.025	0.026	0.30767
3510.00	2.8490	2.941	1.184	0.025	0.026	0.30756
3520.00	2.8409	2.936	1.185	0.025	0.026	0.30722
3530.00	2.8329	2.933	1.194	0.025	0.026	0.30693
3540.00	2.8249	2.930	1.185	0.025	0.026	0.30671
3550.00	2.8169	2.924	1.183	0.025	0.026	0.30597
3560.00	2.8090	2.922	1.178	0.025	0.026	0.30536
3570.00	2.8011	2.923	1.177	0.025	0.026	0.30528
3580.00	2.7933	2.921	1.179	0.025	0.026	0.30537
3590.00	2.7855	2.917	1.179	0.025	0.026	0.30501
3600.00	2.7778	2.913	1.176	0.025	0.025	0.30434
3610.00	2.7701	2.913	1.176	0.025	0.025	0.30438
3620.00	2.7624	2.909	1.180	0.025	0.025	0.30437
3630.00	2.7548	2.905	1.175	0.024	0.025	0.30359
3640.00	2.7473	2.906	1.176	0.024	0.025	0.30376
3650.00	2.7397	2.900	1.176	0.024	0.025	0.30327
3660.00	2.7322	2.898	1.175	0.024	0.025	0.30293
3670.00	2.7248	2.895	1.176	0.024	0.025	0.30278

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.894	1.173	0.024	0.025	0.30239
3690.00	2.7100	2.894	1.176	0.024	0.025	0.30267
3700.00	2.7027	2.888	1.176	0.024	0.025	0.30209
3710.00	2.6954	2.885	1.175	0.024	0.025	0.30175
3720.00	2.6882	2.883	1.174	0.024	0.025	0.30156
3730.00	2.6810	2.879	1.176	0.024	0.025	0.30137
3740.00	2.6738	2.874	1.174	0.024	0.025	0.30074
3750.00	2.6667	2.870	1.173	0.024	0.025	0.30027
3760.00	2.6596	2.869	1.170	0.024	0.025	0.29996
3770.00	2.6525	2.867	1.171	0.024	0.025	0.29982
3780.00	2.6455	2.864	1.169	0.024	0.025	0.29934
3790.00	2.6385	2.863	1.168	0.024	0.025	0.29923
3800.00	2.6316	2.857	1.168	0.024	0.025	0.29872
3810.00	2.6247	2.857	1.167	0.024	0.025	0.29856
3820.00	2.6178	2.852	1.169	0.024	0.025	0.29830
3830.00	2.6110	2.852	1.165	0.024	0.025	0.29783
3840.00	2.6042	2.851	1.168	0.024	0.025	0.29813
3850.00	2.5974	2.843	1.166	0.024	0.025	0.29717
3860.00	2.5907	2.844	1.163	0.024	0.025	0.29699
3870.00	2.5840	2.839	1.166	0.024	0.025	0.29680
3880.00	2.5773	2.837	1.160	0.024	0.025	0.29600
3890.00	2.5707	2.837	1.162	0.024	0.025	0.29624
3900.00	2.5641	2.834	1.161	0.023	0.025	0.29591
3910.00	2.5575	2.833	1.160	0.023	0.025	0.29568
3920.00	2.5510	2.831	1.161	0.023	0.025	0.29561
3930.00	2.5445	2.825	1.161	0.023	0.024	0.29515
3940.00	2.5381	2.826	1.161	0.023	0.024	0.29512
3950.00	2.5316	2.821	1.161	0.023	0.024	0.29473
3960.00	2.5253	2.818	1.158	0.023	0.024	0.29420
3970.00	2.5189	2.816	1.160	0.023	0.024	0.29421
3980.00	2.5126	2.812	1.158	0.023	0.024	0.29363
3990.00	2.5063	2.813	1.156	0.023	0.024	0.29350
4000.00	2.5000	2.811	1.158	0.023	0.024	0.29348
4016.06	2.4900	2.805	1.158	0.023	0.024	0.29305
4032.26	2.4800	2.801	1.157	0.023	0.024	0.29258
4048.58	2.4700	2.797	1.157	0.023	0.024	0.29219
4065.04	2.4600	2.791	1.157	0.023	0.024	0.29168
4081.63	2.4500	2.785	1.156	0.023	0.024	0.29099
4098.36	2.4400	2.780	1.154	0.023	0.024	0.29036
4115.23	2.4300	2.776	1.152	0.023	0.024	0.28980
4132.23	2.4200	2.771	1.151	0.023	0.024	0.28925
4149.38	2.4100	2.767	1.149	0.023	0.024	0.28871
4166.67	2.4000	2.763	1.147	0.023	0.024	0.28815
4184.10	2.3900	2.758	1.146	0.023	0.024	0.28765
4201.68	2.3800	2.754	1.145	0.022	0.024	0.28710
4219.41	2.3700	2.751	1.144	0.022	0.024	0.28670
4237.29	2.3600	2.747	1.144	0.022	0.024	0.28632
4255.32	2.3500	2.741	1.144	0.022	0.023	0.28583
4273.50	2.3400	2.735	1.142	0.022	0.023	0.28515
4291.85	2.3300	2.730	1.140	0.022	0.023	0.28450



WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.726	1.138	0.022	0.023	0.28389
4329.00	2.3100	2.722	1.137	0.022	0.023	0.28339
4347.83	2.3000	2.718	1.137	0.022	0.023	0.28310
4366.81	2.2900	2.713	1.137	0.022	0.023	0.28261
4385.96	2.2800	2.706	1.137	0.022	0.023	0.28201
4405.29	2.2700	2.699	1.136	0.022	0.023	0.28121
4424.78	2.2600	2.693	1.134	0.022	0.023	0.28043
4444.44	2.2500	2.685	1.131	0.022	0.023	0.27950
4464.29	2.2400	2.680	1.127	0.021	0.023	0.27850
4484.30	2.2300	2.675	1.124	0.021	0.023	0.27778
4504.50	2.2200	2.671	1.121	0.021	0.023	0.27704
4524.89	2.2100	2.666	1.118	0.021	0.022	0.27636
4545.45	2.2000	2.662	1.116	0.021	0.022	0.27573
4566.21	2.1900	2.657	1.114	0.021	0.022	0.27510
4587.16	2.1800	2.653	1.112	0.021	0.022	0.27441
4608.29	2.1700	2.648	1.110	0.021	0.022	0.27382
4629.63	2.1600	2.643	1.109	0.021	0.022	0.27321
4651.16	2.1500	2.638	1.106	0.021	0.022	0.27247
4672.90	2.1400	2.633	1.104	0.021	0.022	0.27179
4694.84	2.1300	2.629	1.102	0.021	0.022	0.27119
4716.98	2.1200	2.624	1.100	0.021	0.022	0.27051
4739.34	2.1100	2.619	1.099	0.021	0.022	0.26991
4761.90	2.1000	2.613	1.097	0.021	0.022	0.26916
4784.69	2.0900	2.608	1.095	0.020	0.022	0.26846
4807.69	2.0800	2.603	1.094	0.020	0.022	0.26783
4830.92	2.0700	2.597	1.092	0.020	0.021	0.26710
4854.37	2.0600	2.592	1.090	0.020	0.021	0.26640
4878.05	2.0500	2.586	1.089	0.020	0.021	0.26574
4901.96	2.0400	2.580	1.088	0.020	0.021	0.26510
4926.11	2.0300	2.573	1.086	0.020	0.021	0.26428
4950.50	2.0200	2.566	1.085	0.020	0.021	0.26343
4975.12	2.0100	2.558	1.084	0.020	0.021	0.26263
5000.00	2.0000	2.545	1.080	0.020	0.021	0.26091
5025.13	1.9900	2.539	1.069	0.020	0.021	0.25914
5050.51	1.9800	2.536	1.065	0.020	0.021	0.25837
5076.14	1.9700	2.532	1.061	0.019	0.021	0.25755
5102.04	1.9600	2.527	1.058	0.019	0.020	0.25679
5128.21	1.9500	2.521	1.056	0.019	0.020	0.25590
5154.64	1.9400	2.515	1.052	0.019	0.020	0.25490
5181.35	1.9300	2.510	1.048	0.019	0.020	0.25394
5208.33	1.9200	2.504	1.044	0.019	0.020	0.25300
5235.60	1.9100	2.498	1.041	0.019	0.020	0.25202
5263.16	1.9000	2.492	1.037	0.019	0.020	0.25100
5291.01	1.8900	2.487	1.033	0.019	0.020	0.24999
5319.15	1.8800	2.480	1.028	0.019	0.020	0.24877
5347.59	1.8700	2.475	1.021	0.019	0.019	0.24753
5376.34	1.8600	2.474	1.017	0.019	0.019	0.24696
5405.41	1.8500	2.471	1.017	0.019	0.019	0.24663
5434.78	1.8400	2.464	1.015	0.018	0.019	0.24570
5464.48	1.8300	2.457	1.012	0.018	0.019	0.24472

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.451	1.008	0.018	0.019	0.24368
5524.86	1.8100	2.446	1.004	0.018	0.019	0.24282
5555.56	1.8000	2.441	1.003	0.018	0.019	0.24208
5586.59	1.7900	2.432	1.000	0.018	0.019	0.24091
5617.98	1.7800	2.425	0.996	0.018	0.019	0.23973
5649.72	1.7700	2.419	0.991	0.018	0.019	0.23857
5681.82	1.7600	2.412	0.987	0.018	0.019	0.23745
5714.29	1.7500	2.405	0.983	0.018	0.018	0.23627
5747.13	1.7400	2.398	0.979	0.018	0.018	0.23506
5780.35	1.7300	2.391	0.974	0.017	0.018	0.23379
5813.95	1.7200	2.385	0.969	0.017	0.018	0.23255
5847.95	1.7100	2.378	0.964	0.017	0.018	0.23127
5882.35	1.7000	2.371	0.959	0.017	0.018	0.22996
5917.16	1.6900	2.364	0.953	0.017	0.018	0.22863
5952.38	1.6800	2.357	0.947	0.017	0.018	0.22724
5988.02	1.6700	2.350	0.942	0.017	0.017	0.22588
6024.10	1.6600	2.343	0.935	0.017	0.017	0.22445
6060.61	1.6500	2.337	0.929	0.017	0.017	0.22308
6097.56	1.6400	2.331	0.923	0.016	0.017	0.22166
6134.97	1.6300	2.325	0.917	0.016	0.017	0.22033
6172.84	1.6200	2.319	0.910	0.016	0.017	0.21891
6211.18	1.6100	2.314	0.904	0.016	0.017	0.21761
6250.00	1.6000	2.308	0.898	0.016	0.017	0.21627
6289.31	1.5900	2.301	0.892	0.016	0.016	0.21489
6329.11	1.5800	2.295	0.885	0.016	0.016	0.21347
6369.43	1.5700	2.290	0.879	0.016	0.016	0.21218
6410.26	1.5600	2.284	0.872	0.016	0.016	0.21071
6451.61	1.5500	2.278	0.867	0.016	0.016	0.20945
6493.51	1.5400	2.270	0.860	0.015	0.016	0.20787
6535.95	1.5300	2.265	0.852	0.015	0.016	0.20632
6578.95	1.5200	2.259	0.846	0.015	0.016	0.20495
6622.52	1.5100	2.252	0.839	0.015	0.015	0.20345
6666.67	1.5000	2.246	0.831	0.015	0.015	0.20184
6711.41	1.4900	2.240	0.824	0.015	0.015	0.20025
6756.76	1.4800	2.233	0.816	0.015	0.015	0.19866
6802.72	1.4700	2.227	0.808	0.015	0.015	0.19710
6849.32	1.4600	2.221	0.800	0.014	0.015	0.19541
6896.55	1.4500	2.215	0.791	0.014	0.015	0.19379
6944.44	1.4400	2.209	0.783	0.014	0.014	0.19215
6993.01	1.4300	2.203	0.774	0.014	0.014	0.19042
7042.25	1.4200	2.198	0.765	0.014	0.014	0.18887
7092.20	1.4100	2.192	0.757	0.014	0.014	0.18720
7142.86	1.4000	2.186	0.747	0.014	0.014	0.18542
7194.24	1.3900	2.181	0.737	0.014	0.014	0.18377
7246.38	1.3800	2.176	0.728	0.013	0.013	0.18212
7299.27	1.3700	2.171	0.718	0.013	0.013	0.18045
7352.94	1.3600	2.166	0.708	0.013	0.013	0.17872
7407.41	1.3500	2.162	0.698	0.013	0.013	0.17712
7462.69	1.3400	2.158	0.688	0.013	0.013	0.17550
7518.80	1.3300	2.153	0.678	0.013	0.013	0.17390

WN	WL	N	K	DN	DK	R
7575.76	1.3200	2.149	0.667	0.013	0.012	0.17232
7633.59	1.3100	2.146	0.657	0.013	0.012	0.17080
7692.31	1.3000	2.143	0.647	0.012	0.012	0.16932
7751.94	1.2900	2.139	0.637	0.012	0.012	0.16776
7812.50	1.2800	2.135	0.626	0.012	0.012	0.16626
7874.02	1.2700	2.132	0.616	0.012	0.012	0.16480
7936.51	1.2600	2.129	0.605	0.012	0.011	0.16335
8000.00	1.2500	2.126	0.595	0.012	0.011	0.16189
8064.52	1.2400	2.123	0.584	0.012	0.011	0.16052
8130.08	1.2300	2.120	0.574	0.012	0.011	0.15915
8196.72	1.2200	2.117	0.564	0.012	0.011	0.15775
8264.46	1.2100	2.114	0.554	0.011	0.011	0.15644
8333.13	1.2000	2.106	0.542	0.011	0.010	0.15440
8403.36	1.1900	2.103	0.525	0.011	0.010	0.15247
8474.58	1.1800	2.104	0.512	0.011	0.010	0.15135
8547.01	1.1700	2.103	0.500	0.011	0.010	0.15020
8620.69	1.1600	2.102	0.487	0.011	0.009	0.14903
8695.65	1.1500	2.102	0.475	0.011	0.009	0.14793
8771.93	1.1400	2.102	0.462	0.011	0.009	0.14695
8849.56	1.1300	2.102	0.450	0.011	0.009	0.14592
8928.57	1.1200	2.103	0.437	0.010	0.009	0.14497
9009.01	1.1100	2.104	0.424	0.010	0.008	0.14424
9090.91	1.1000	2.106	0.413	0.010	0.008	0.14359
9174.31	1.0900	2.107	0.401	0.010	0.008	0.14296
9259.26	1.0800	2.108	0.389	0.010	0.008	0.14230
9345.79	1.0700	2.110	0.377	0.010	0.008	0.14167
9433.96	1.0600	2.112	0.365	0.010	0.007	0.14115
9523.81	1.0500	2.114	0.353	0.010	0.007	0.14065
9615.38	1.0400	2.116	0.341	0.010	0.007	0.14025
9708.74	1.0300	2.119	0.329	0.010	0.007	0.13992
9803.92	1.0200	2.122	0.317	0.010	0.006	0.13967
9900.99	1.0100	2.125	0.305	0.010	0.006	0.13949
10000.00	1.0000	2.130	0.292	0.010	0.006	0.13943
10101.01	0.9900	2.134	0.280	0.010	0.006	0.13942
10204.08	0.9800	2.139	0.267	0.010	0.005	0.13959
10309.28	0.9700	2.146	0.255	0.010	0.005	0.13995
10416.67	0.9600	2.153	0.244	0.010	0.005	0.14050
10526.32	0.9500	2.159	0.234	0.010	0.005	0.14101
10638.30	0.9400	2.168	0.223	0.010	0.005	0.14179
10752.69	0.9300	2.175	0.215	0.010	0.005	0.14258
10869.57	0.9200	2.182	0.207	0.010	0.004	0.14328
10989.01	0.9100	2.189	0.198	0.010	0.004	0.14396
11111.11	0.9000	2.196	0.189	0.010	0.004	0.14472
11233.94	0.8900	2.205	0.181	0.010	0.004	0.14572
11363.64	0.8800	2.213	0.173	0.010	0.004	0.14664
11494.25	0.8700	2.222	0.167	0.010	0.004	0.14775
11627.91	0.8600	2.229	0.161	0.010	0.003	0.14873
11764.71	0.8500	2.236	0.155	0.010	0.003	0.14960
11904.76	0.8400	2.245	0.149	0.010	0.003	0.15069
12048.19	0.8300	2.253	0.143	0.011	0.003	0.15172

WN	WL	N	K	DN	DK	R
12195.12	0.8200	2.262	0.138	0.011	0.003	0.15294
12345.68	0.8100	2.272	0.134	0.011	0.003	0.15431
12500.00	0.8000	2.279	0.134	0.011	0.003	0.15532
12658.23	0.7900	2.284	0.128	0.011	0.003	0.15586
12820.51	0.7800	2.294	0.123	0.011	0.003	0.15722
12987.01	0.7700	2.303	0.120	0.011	0.003	0.15854
13157.89	0.7600	2.312	0.119	0.011	0.003	0.15976
13333.33	0.7500	2.320	0.118	0.011	0.003	0.16096
13513.51	0.7400	2.329	0.118	0.011	0.003	0.16217
13698.63	0.7300	2.336	0.119	0.011	0.003	0.16320
13888.89	0.7200	2.343	0.120	0.012	0.003	0.16420
14084.51	0.7100	2.349	0.122	0.012	0.003	0.16514
14285.71	0.7000	2.355	0.124	0.012	0.003	0.16599
14492.75	0.6900	2.359	0.127	0.012	0.003	0.16667
14705.88	0.6800	2.362	0.131	0.012	0.003	0.16720
14925.37	0.6700	2.364	0.135	0.012	0.003	0.16755
15151.52	0.6600	2.363	0.137	0.012	0.003	0.16750
15384.62	0.6500	2.366	0.138	0.012	0.003	0.16788
15625.00	0.6400	2.366	0.145	0.012	0.003	0.16808
15873.02	0.6300	2.358	0.148	0.012	0.003	0.16692
16129.03	0.6200	2.353	0.144	0.012	0.003	0.16620
16393.44	0.6100	2.350	0.141	0.012	0.003	0.16560
16666.67	0.6000	2.346	0.136	0.012	0.003	0.16505
16949.15	0.5900	2.344	0.131	0.012	0.003	0.16460
17241.38	0.5800	2.342	0.125	0.012	0.003	0.16420
17543.86	0.5700	2.342	0.118	0.012	0.003	0.16407
17857.14	0.5600	2.342	0.112	0.012	0.002	0.16398
18181.82	0.5500	2.343	0.105	0.012	0.002	0.16398
18518.52	0.5400	2.344	0.099	0.012	0.002	0.16401
18867.92	0.5300	2.346	0.091	0.012	0.002	0.16417
19230.77	0.5200	2.349	0.083	0.012	0.002	0.16455
19607.84	0.5100	2.354	0.077	0.012	0.002	0.16516
20000.00	0.5000	2.359	0.071	0.012	0.002	0.16579
20408.16	0.4900	2.364	0.067	0.012	0.001	0.16647
20833.33	0.4800	2.365	0.063	0.012	0.001	0.16670
21276.60	0.4700	2.367	0.054	0.012	0.001	0.16685
21739.13	0.4600	2.374	0.042	0.012	0.001	0.16780
22222.22	0.4500	2.386	0.032	0.012	0.001	0.16950
22727.27	0.4400	2.404	0.026	0.012	0.001	0.17194
23255.81	0.4300	2.423	0.026	0.012	0.001	0.17471
23809.52	0.4200	2.440	0.034	0.013	0.001	0.17723
24390.24	0.4100	2.453	0.047	0.013	0.001	0.17910
25000.00	0.4000	2.462	0.062	0.013	0.001	0.18049
25641.03	0.3900	2.464	0.080	0.013	0.002	0.18087
26315.79	0.3800	2.459	0.096	0.013	0.002	0.18038
27027.03	0.3700	2.447	0.108	0.013	0.002	0.17884
27777.78	0.3600	2.434	0.112	0.013	0.003	0.17705
28571.43	0.3500	2.422	0.111	0.012	0.002	0.17543
29411.76	0.3400	2.415	0.108	0.012	0.002	0.17436
30303.03	0.3300	2.409	0.105	0.012	0.002	0.17349

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WN	WL	N	K	DN	DK	R
31250.00	0.3200	2.403	0.103	0.012	0.002	0.17258
32258.06	0.3100	2.398	0.096	0.012	0.002	0.17182
33333.33	0.3000	2.398	0.091	0.012	0.002	0.17171
34482.76	0.2900	2.397	0.088	0.012	0.002	0.17155
35714.29	0.2800	2.401	0.085	0.012	0.002	0.17203
37037.04	0.2700	2.404	0.092	0.012	0.002	0.17260
38461.54	0.2600	2.400	0.102	0.012	0.002	0.17210
40000.00	0.2500	2.387	0.114	0.012	0.003	0.17049
41666.67	0.2400	2.364	0.120	0.012	0.003	0.16731
43478.26	0.2300	2.337	0.118	0.011	0.003	0.16339
45454.55	0.2200	2.305	0.109	0.011	0.002	0.15857
47619.05	0.2100	2.256	0.085	0.010	0.002	0.15115

## 5.6 Cuprous Oxide ( $\text{Cu}_2\text{O}$ )

The infrared reflectance spectrum and computed values of  $n$  and  $k$  for the 8mm dia. pellet of cuprous oxide are presented in graphical form in Figs. 40-41. We could not obtain a reliable uv-vis-nir reflectance spectrum for the 8mm dia. cuprous oxide pellet. The slit image of the Varian spectrophotometer was of greater dimensions than the 8mm dia. of the pellet. This introduced a systematic error that we were unable to correct. Thus only the infrared spectrum is presented.

Tabulated values of the reflectance and of  $n$  and  $k$  are also presented in the following pages. In the tabulation the values of  $k$  are negative, i.e. nonphysical values, in the  $180\text{--}370\text{ cm}^{-1}$  wave-number region. This is an artifact of the Kramers-Kronig analysis due to an assumption that  $R(\nu) = R(180\text{ cm}^{-1})$  throughout the  $0\text{--}180\text{ cm}^{-1}$  wave-number region where we can not measure the reflectance spectrum.

The first derivative of the reflectance spectrum is presented in Fig. 42. Note that the single band centered at about  $625\text{ cm}^{-1}$  is quite distinct in the first derivative spectrum.

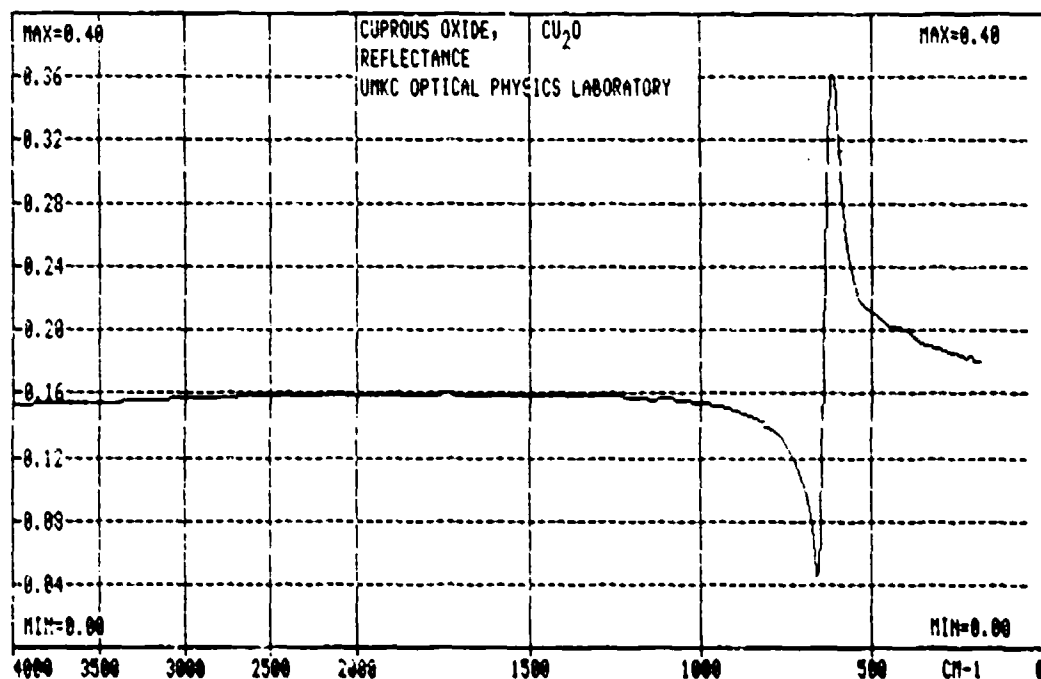


Figure 40. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of cuprous oxide ( $\text{Cu}_2\text{O}$ ).

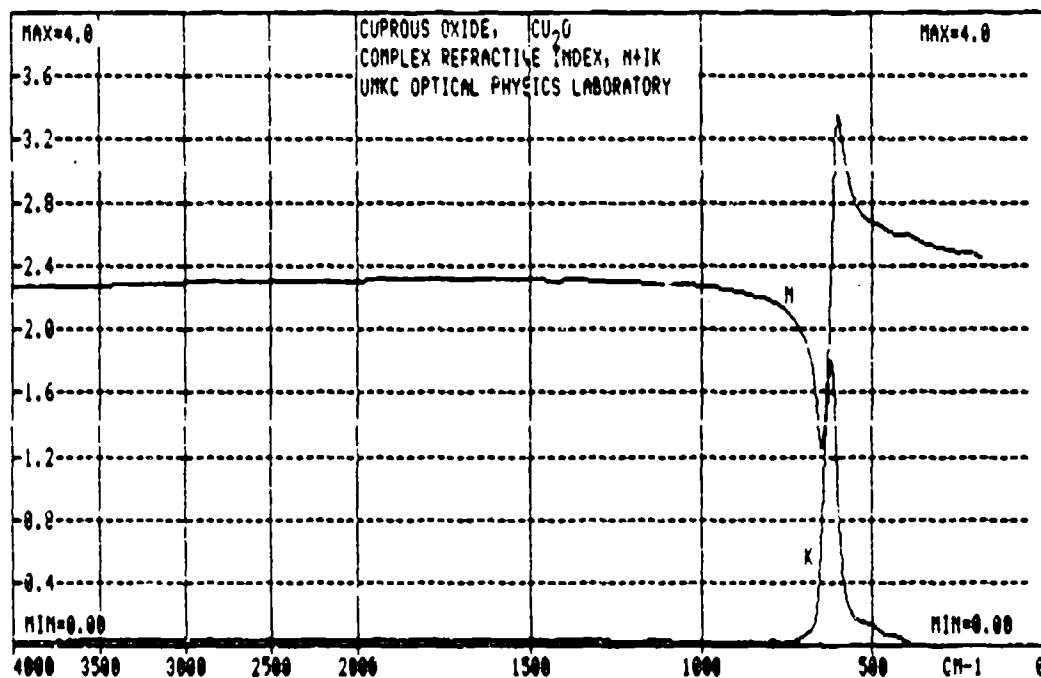


Figure 41. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for cuprous oxide ( $\text{Cu}_2\text{O}$ ).

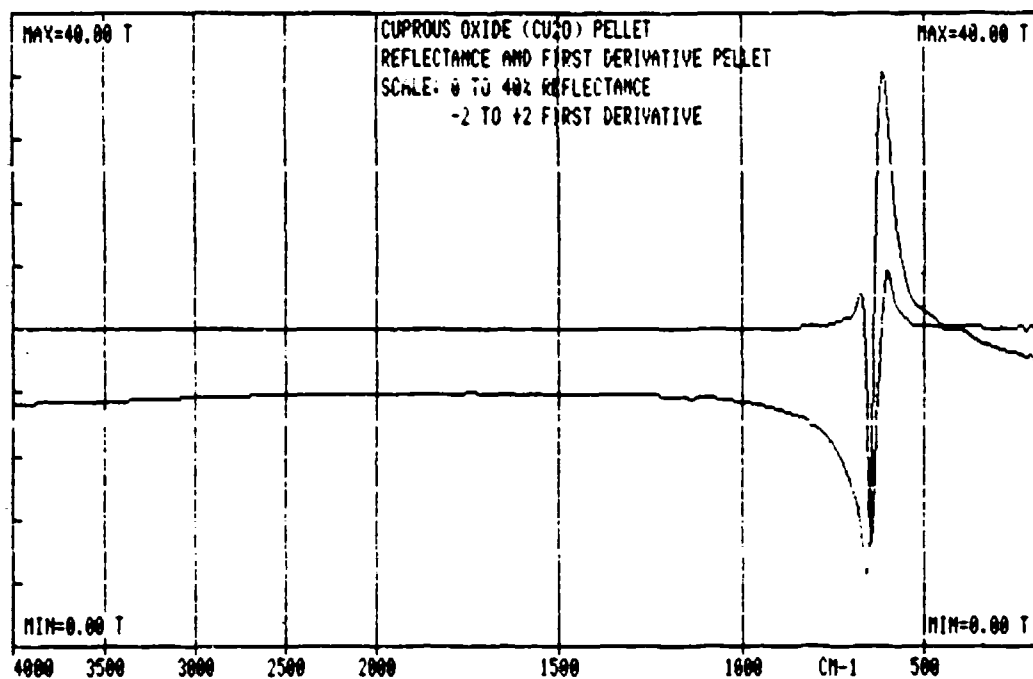


Figure 42. The first derivative of the infrared reflectance spectrum of cuprous oxide ( $\text{Cu}_2\text{O}$ ).



WN	WL	N	K	DN	DK	R
180.00	55.5556	2.456	-0.012	0.017	0.000	0.17940
190.00	52.6316	2.462	-0.018	0.013	0.000	0.18023
200.00	50.0000	2.467	-0.021	0.013	0.000	0.18097
210.00	47.6190	2.483	-0.023	0.013	0.001	0.18323
220.00	45.4545	2.481	-0.007	0.013	0.000	0.18283
230.00	43.4783	2.482	-0.019	0.013	0.000	0.18304
240.00	41.6667	2.490	-0.018	0.013	0.000	0.18422
250.00	40.0000	2.496	-0.013	0.013	0.000	0.18507
260.00	38.4615	2.496	-0.012	0.013	0.000	0.18500
270.00	37.0370	2.502	-0.013	0.013	0.000	0.18583
280.00	35.7143	2.506	-0.012	0.013	0.000	0.18641
290.00	34.4828	2.513	-0.012	0.014	0.000	0.18734
300.00	33.3333	2.519	-0.008	0.014	0.000	0.18819
310.00	32.2581	2.523	-0.006	0.014	0.000	0.18874
320.00	31.2500	2.528	-0.003	0.014	0.000	0.18943
330.00	30.3030	2.531	-0.002	0.014	0.000	0.18991
340.00	29.4118	2.535	-0.002	0.014	0.000	0.19050
350.00	28.5714	2.543	-0.004	0.014	0.000	0.19163
360.00	27.7778	2.553	-0.002	0.014	0.000	0.19299
370.00	27.0270	2.565	-0.001	0.014	0.000	0.19470
380.00	26.3158	2.578	0.005	0.014	0.000	0.19644
390.00	25.6410	2.590	0.012	0.015	0.000	0.19812
400.00	25.0000	2.604	0.023	0.015	0.001	0.20002
410.00	24.3902	2.613	0.039	0.015	0.001	0.20134
420.00	23.8095	2.616	0.054	0.015	0.001	0.20188
430.00	23.2558	2.615	0.064	0.015	0.002	0.20175
440.00	22.7273	2.615	0.068	0.015	0.002	0.20187
450.00	22.2222	2.622	0.069	0.015	0.002	0.20279
460.00	21.7391	2.635	0.073	0.015	0.002	0.20468
470.00	21.2766	2.650	0.083	0.015	0.002	0.20680
480.00	20.8333	2.663	0.098	0.016	0.002	0.20874
490.00	20.4082	2.672	0.113	0.016	0.003	0.21009
500.00	20.0000	2.681	0.125	0.016	0.003	0.21146
510.00	19.6078	2.692	0.138	0.016	0.003	0.21310
520.00	19.2308	2.704	0.146	0.016	0.003	0.21484
530.00	18.8679	2.723	0.152	0.016	0.004	0.21751
540.00	18.5185	2.755	0.158	0.017	0.004	0.22186
550.00	18.1818	2.803	0.171	0.018	0.004	0.22839
560.00	17.8571	2.868	0.200	0.019	0.005	0.23733
570.00	17.5439	2.947	0.249	0.020	0.006	0.24853
580.00	17.2414	3.057	0.330	0.022	0.008	0.26409
590.00	16.9492	3.209	0.489	0.025	0.013	0.28729
600.00	16.6667	3.366	0.852	0.029	0.022	0.32188
610.00	16.3934	3.190	1.471	0.030	0.033	0.35526
620.00	16.1290	2.525	1.822	0.024	0.028	0.36091
630.00	15.8730	1.856	1.694	0.019	0.017	0.32928
640.00	15.6250	1.384	1.275	0.016	0.012	0.24517
650.00	15.3846	1.250	0.736	0.009	0.005	0.10943
660.00	15.1515	1.392	0.333	0.005	0.005	0.04611
670.00	14.9254	1.616	0.147	0.004	0.003	0.05937

WN	WL	N	K	DN	DK	R
680.00	14.7059	1.779	0.098	0.006	0.002	0.08087
690.00	14.4928	1.871	0.087	0.006	0.002	0.09416
700.00	14.2857	1.925	0.073	0.007	0.001	0.10187
710.00	14.0843	1.971	0.054	0.007	0.001	0.10844
720.00	13.8889	2.013	0.040	0.008	0.001	0.11468
730.00	13.6966	2.051	0.031	0.008	0.001	0.12030
740.00	13.5135	2.083	0.028	0.009	0.001	0.12498
750.00	13.3333	2.109	0.027	0.009	0.001	0.12881
760.00	13.1579	2.131	0.027	0.009	0.001	0.13211
770.00	12.9870	2.148	0.030	0.009	0.001	0.13472
780.00	12.8205	2.161	0.032	0.009	0.001	0.13667
790.00	12.6582	2.172	0.033	0.009	0.001	0.13820
800.00	12.5000	2.181	0.033	0.010	0.001	0.13960
810.00	12.3457	2.190	0.032	0.010	0.001	0.14085
820.00	12.1951	2.198	0.031	0.010	0.001	0.14202
830.00	12.0482	2.205	0.030	0.010	0.001	0.14312
840.00	11.9048	2.212	0.030	0.010	0.001	0.14407
850.00	11.7647	2.218	0.029	0.010	0.001	0.14500
860.00	11.6279	2.224	0.029	0.010	0.001	0.14582
870.00	11.4943	2.229	0.027	0.010	0.001	0.14667
880.00	11.3636	2.235	0.026	0.010	0.001	0.14744
890.00	11.2360	2.240	0.026	0.010	0.001	0.14816
900.00	11.1111	2.245	0.025	0.010	0.001	0.14889
910.00	10.9890	2.249	0.025	0.010	0.001	0.14957
920.00	10.8696	2.254	0.026	0.010	0.001	0.15020
930.00	10.7527	2.257	0.026	0.010	0.001	0.15075
940.00	10.6383	2.261	0.026	0.010	0.001	0.15134
950.00	10.5263	2.265	0.027	0.011	0.001	0.15184
960.00	10.4167	2.268	0.027	0.011	0.001	0.15226
970.00	10.3093	2.270	0.027	0.011	0.001	0.15266
980.00	10.2041	2.273	0.027	0.011	0.001	0.15310
990.00	10.1010	2.276	0.029	0.011	0.001	0.15355
1000.00	10.0000	2.277	0.030	0.011	0.001	0.15370
1010.00	9.9010	2.278	0.029	0.011	0.001	0.15386
1020.00	9.8039	2.281	0.028	0.011	0.001	0.15419
1030.00	9.7087	2.283	0.028	0.011	0.001	0.15458
1040.00	9.6154	2.286	0.028	0.011	0.001	0.15499
1050.00	9.5238	2.289	0.029	0.011	0.001	0.15533
1060.00	9.4340	2.291	0.030	0.011	0.001	0.15564
1070.00	9.3458	2.292	0.031	0.011	0.001	0.15587
1080.00	9.2593	2.294	0.032	0.011	0.001	0.15611
1090.00	9.1743	2.295	0.033	0.011	0.001	0.15636
1100.00	9.0909	2.296	0.035	0.011	0.001	0.15650
1110.00	9.0090	2.296	0.037	0.011	0.001	0.15647
1120.00	8.9286	2.294	0.038	0.011	0.001	0.15624
1130.00	8.8496	2.293	0.037	0.011	0.001	0.15603
1140.00	8.7719	2.293	0.036	0.011	0.001	0.15595
1150.00	8.6957	2.293	0.034	0.011	0.001	0.15601
1160.00	8.6207	2.294	0.032	0.011	0.001	0.15619
1170.00	8.5470	2.296	0.031	0.011	0.001	0.15644

WN	WL	N	K	DN	DK	R
1180.00	8.4746	2.298	0.031	0.011	0.001	0.15669
1190.00	8.4034	2.299	0.031	0.011	0.001	0.15692
1200.00	8.3333	2.301	0.031	0.011	0.001	0.15712
1210.00	8.2643	2.302	0.031	0.011	0.001	0.15730
1220.00	8.1967	2.303	0.031	0.011	0.001	0.15750
1230.00	8.1301	2.305	0.031	0.011	0.001	0.15770
1240.00	8.0645	2.306	0.032	0.011	0.001	0.15787
1250.00	8.0000	2.307	0.032	0.011	0.001	0.15797
1260.00	7.9365	2.307	0.032	0.011	0.001	0.15810
1270.00	7.8740	2.308	0.033	0.011	0.001	0.15823
1280.00	7.8125	2.309	0.033	0.011	0.001	0.15835
1290.00	7.7519	2.310	0.033	0.011	0.001	0.15843
1300.00	7.6923	2.311	0.034	0.011	0.001	0.15857
1310.00	7.6336	2.312	0.034	0.011	0.001	0.15871
1320.00	7.5758	2.312	0.035	0.011	0.001	0.15878
1330.00	7.5188	2.312	0.036	0.011	0.001	0.15881
1340.00	7.4627	2.313	0.036	0.011	0.001	0.15890
1350.00	7.4074	2.313	0.037	0.011	0.001	0.15898
1360.00	7.3529	2.314	0.037	0.011	0.001	0.15904
1370.00	7.2993	2.314	0.039	0.011	0.001	0.15905
1380.00	7.2464	2.313	0.039	0.011	0.001	0.15900
1390.00	7.1942	2.313	0.040	0.011	0.001	0.15893
1400.00	7.1429	2.313	0.040	0.011	0.001	0.15890
1410.00	7.0922	2.312	0.040	0.011	0.001	0.15885
1420.00	7.0423	2.312	0.039	0.011	0.001	0.15885
1430.00	6.9930	2.312	0.040	0.011	0.001	0.15883
1440.00	6.9444	2.312	0.039	0.011	0.001	0.15880
1450.00	6.8966	2.312	0.039	0.011	0.001	0.15885
1460.00	6.8493	2.313	0.039	0.011	0.001	0.15896
1470.00	6.8027	2.314	0.039	0.011	0.001	0.15905
1480.00	6.7568	2.313	0.040	0.011	0.001	0.15900
1490.00	6.7114	2.313	0.040	0.011	0.001	0.15900
1500.00	6.6667	2.314	0.039	0.011	0.001	0.15903
1510.00	6.6225	2.314	0.040	0.011	0.001	0.15905
1520.00	6.5789	2.314	0.040	0.011	0.001	0.15910
1530.00	6.5359	2.314	0.040	0.011	0.001	0.15910
1540.00	6.4935	2.314	0.040	0.011	0.001	0.15910
1550.00	6.4516	2.314	0.040	0.011	0.001	0.15910
1560.00	6.4103	2.314	0.040	0.011	0.001	0.15915
1570.00	6.3694	2.314	0.041	0.011	0.001	0.15917
1580.00	6.3291	2.314	0.041	0.011	0.001	0.15910
1590.00	6.2893	2.314	0.041	0.011	0.001	0.15905
1600.00	6.2500	2.313	0.041	0.011	0.001	0.15900
1610.00	6.2112	2.313	0.041	0.011	0.001	0.15900
1620.00	6.1728	2.313	0.041	0.011	0.001	0.15900
1630.00	6.1350	2.314	0.040	0.011	0.001	0.15905
1640.00	6.0976	2.314	0.040	0.011	0.001	0.15905
1650.00	6.0606	2.314	0.040	0.011	0.001	0.15905
1660.00	6.0241	2.314	0.040	0.011	0.001	0.15905
1670.00	5.9880	2.314	0.040	0.011	0.001	0.15910

WN	WL	N	K	DN	DK	R
1680.00	5.9524	2.314	0.040	0.011	0.001	0.15910
1690.00	5.9172	2.314	0.040	0.011	0.001	0.15912
1700.00	5.8824	2.314	0.040	0.011	0.001	0.15915
1710.00	5.8480	2.315	0.040	0.011	0.001	0.15918
1720.00	5.8140	2.315	0.041	0.011	0.001	0.15920
1730.00	5.7803	2.315	0.041	0.011	0.001	0.15925
1740.00	5.7471	2.315	0.041	0.011	0.001	0.15930
1750.00	5.7143	2.315	0.042	0.011	0.001	0.15925
1760.00	5.6818	2.315	0.042	0.011	0.001	0.15920
1770.00	5.6497	2.315	0.042	0.011	0.001	0.15920
1780.00	5.6180	2.315	0.042	0.011	0.001	0.15918
1790.00	5.5866	2.314	0.042	0.011	0.001	0.15915
1800.00	5.5556	2.315	0.041	0.011	0.001	0.15918
1810.00	5.5249	2.315	0.042	0.011	0.001	0.15920
1820.00	5.4945	2.315	0.042	0.011	0.001	0.15920
1830.00	5.4645	2.315	0.042	0.011	0.001	0.15920
1840.00	5.4348	2.315	0.042	0.011	0.001	0.15920
1850.00	5.4054	2.315	0.042	0.011	0.001	0.15920
1860.00	5.3763	2.313	0.043	0.011	0.001	0.15920
1870.00	5.3476	2.315	0.043	0.011	0.001	0.15920
1880.00	5.3191	2.315	0.043	0.011	0.001	0.15920
1890.00	5.2910	2.314	0.044	0.011	0.001	0.15912
1900.00	5.2632	2.314	0.043	0.011	0.001	0.15905
1910.00	5.2356	2.314	0.043	0.011	0.001	0.15906
1920.00	5.2083	2.314	0.044	0.011	0.001	0.15910
1930.00	5.1813	2.314	0.044	0.011	0.001	0.15905
1940.00	5.1546	2.313	0.044	0.011	0.001	0.15900
1950.00	5.1282	2.313	0.044	0.011	0.001	0.15895
1960.00	5.1020	2.313	0.044	0.011	0.001	0.15895
1970.00	5.0761	2.313	0.044	0.011	0.001	0.15897
1980.00	5.0505	2.312	0.045	0.011	0.001	0.15889
1990.00	5.0251	2.311	0.045	0.011	0.001	0.15866
2000.00	5.0000	2.310	0.044	0.011	0.001	0.15852
2010.00	4.9751	2.310	0.043	0.011	0.001	0.15852
2020.00	4.9505	2.311	0.043	0.011	0.001	0.15865
2030.00	4.9261	2.310	0.043	0.011	0.001	0.15860
2040.00	4.9020	2.310	0.043	0.011	0.001	0.15860
2050.00	4.8780	2.310	0.042	0.011	0.001	0.15860
2060.00	4.8544	2.311	0.043	0.011	0.001	0.15865
2070.00	4.8309	2.311	0.043	0.011	0.001	0.15865
2080.00	4.8077	2.311	0.043	0.011	0.001	0.15864
2090.00	4.7847	2.310	0.043	0.011	0.001	0.15856
2100.00	4.7619	2.310	0.043	0.011	0.001	0.15855
2110.00	4.7393	2.310	0.042	0.011	0.001	0.15855
2120.00	4.7170	2.310	0.042	0.011	0.001	0.15860
2130.00	4.6948	2.310	0.043	0.011	0.001	0.15859
2140.00	4.6729	2.310	0.043	0.011	0.001	0.15854
2150.00	4.6512	2.310	0.043	0.011	0.001	0.15847
2160.00	4.6296	2.309	0.042	0.011	0.001	0.15845
2170.00	4.6083	2.310	0.042	0.011	0.001	0.15850

WN	WL	N	K	DN	DK	R
2180.00	4.5872	2.310	0.042	0.011	0.001	0.15850
2190.00	4.5662	2.310	0.042	0.011	0.001	0.15850
2200.00	4.5455	2.310	0.042	0.011	0.001	0.15850
2210.00	4.5249	2.309	0.042	0.011	0.001	0.15845
2220.00	4.5045	2.310	0.042	0.011	0.001	0.15850
2230.00	4.4843	2.310	0.042	0.011	0.001	0.15852
2240.00	4.4643	2.310	0.042	0.011	0.001	0.15855
2250.00	4.4444	2.310	0.043	0.011	0.001	0.15854
2260.00	4.4248	2.310	0.043	0.011	0.001	0.15847
2270.00	4.4053	2.309	0.043	0.011	0.001	0.15840
2280.00	4.3860	2.309	0.042	0.011	0.001	0.15845
2290.00	4.3668	2.309	0.042	0.011	0.001	0.15845
2300.00	4.3478	2.309	0.043	0.011	0.001	0.15845
2310.00	4.3290	2.309	0.043	0.011	0.001	0.15840
2320.00	4.3103	2.309	0.043	0.011	0.001	0.15840
2330.00	4.2918	2.309	0.043	0.011	0.001	0.15840
2340.00	4.2735	2.309	0.043	0.011	0.001	0.15835
2350.00	4.2553	2.308	0.043	0.011	0.001	0.15830
2360.00	4.2373	2.308	0.043	0.011	0.001	0.15830
2370.00	4.2194	2.308	0.043	0.011	0.001	0.15830
2380.00	4.2017	2.308	0.043	0.011	0.001	0.15826
2390.00	4.1841	2.308	0.042	0.011	0.001	0.15830
2400.00	4.1667	2.309	0.043	0.011	0.001	0.15835
2410.00	4.1494	2.308	0.043	0.011	0.001	0.15829
2420.00	4.1322	2.308	0.043	0.011	0.001	0.15823
2430.00	4.1152	2.308	0.043	0.011	0.001	0.15823
2440.00	4.0984	2.308	0.043	0.011	0.001	0.15825
2450.00	4.0816	2.308	0.044	0.011	0.001	0.15820
2460.00	4.0650	2.307	0.044	0.011	0.001	0.15812
2470.00	4.0486	2.307	0.043	0.011	0.001	0.15805
2480.00	4.0323	2.307	0.043	0.011	0.001	0.15805
2490.00	4.0161	2.307	0.043	0.011	0.001	0.15808
2500.00	4.0000	2.307	0.043	0.011	0.001	0.15810
2510.00	3.9841	2.307	0.043	0.011	0.001	0.15807
2520.00	3.9683	2.307	0.043	0.011	0.001	0.15805
2530.00	3.9526	2.307	0.043	0.011	0.001	0.15805
2540.00	3.9370	2.307	0.043	0.011	0.001	0.15804
2550.00	3.9216	2.306	0.043	0.011	0.001	0.15800
2560.00	3.9063	2.306	0.043	0.011	0.001	0.15800
2570.00	3.8911	2.306	0.043	0.011	0.001	0.15800
2580.00	3.8760	2.306	0.044	0.011	0.001	0.15800
2590.00	3.8610	2.306	0.044	0.011	0.001	0.15800
2600.00	3.8462	2.306	0.044	0.011	0.001	0.15795
2610.00	3.8314	2.306	0.044	0.011	0.001	0.15790
2620.00	3.8168	2.306	0.044	0.011	0.001	0.15789
2630.00	3.8023	2.305	0.044	0.011	0.001	0.15785
2640.00	3.7879	2.305	0.044	0.011	0.001	0.15785
2650.00	3.7736	2.305	0.044	0.011	0.001	0.15785
2660.00	3.7594	2.305	0.045	0.011	0.001	0.15781
2670.00	3.7453	2.305	0.045	0.011	0.001	0.15775

WN	WL	N	K	DN	DK	R
2680.00	3.7313	2.304	0.045	0.011	0.001	0.15770
2690.00	3.7175	2.304	0.045	0.011	0.001	0.15765
2700.00	3.7037	2.304	0.045	0.011	0.001	0.15764
2710.00	3.6900	2.303	0.045	0.011	0.001	0.15757
2720.00	3.6765	2.303	0.045	0.011	0.001	0.15754
2730.00	3.6630	2.303	0.045	0.011	0.001	0.15749
2740.00	3.6496	2.302	0.045	0.011	0.001	0.15745
2750.00	3.6364	2.302	0.045	0.011	0.001	0.15745
2760.00	3.6232	2.302	0.045	0.011	0.001	0.15740
2770.00	3.6101	2.302	0.045	0.011	0.001	0.15736
2780.00	3.5971	2.302	0.045	0.011	0.001	0.15735
2790.00	3.5842	2.302	0.045	0.011	0.001	0.15735
2800.00	3.5714	2.301	0.045	0.011	0.001	0.15730
2810.00	3.5587	2.301	0.045	0.011	0.001	0.15725
2820.00	3.5461	2.301	0.045	0.011	0.001	0.15725
2830.00	3.5336	2.301	0.046	0.011	0.001	0.15721
2840.00	3.5211	2.300	0.046	0.011	0.001	0.15716
2850.00	3.5088	2.300	0.046	0.011	0.001	0.15710
2860.00	3.4965	2.300	0.046	0.011	0.001	0.15704
2870.00	3.4843	2.299	0.046	0.011	0.001	0.15698
2880.00	3.4722	2.299	0.046	0.011	0.001	0.15693
2890.00	3.4602	2.298	0.046	0.011	0.001	0.15685
2900.00	3.4483	2.298	0.045	0.011	0.001	0.15680
2910.00	3.4364	2.298	0.045	0.011	0.001	0.15680
2920.00	3.4247	2.298	0.045	0.011	0.001	0.15685
2930.00	3.4130	2.298	0.045	0.011	0.001	0.15680
2940.00	3.4014	2.297	0.045	0.011	0.001	0.15671
2950.00	3.3898	2.297	0.045	0.011	0.001	0.15665
2960.00	3.3784	2.297	0.045	0.011	0.001	0.15660
2970.00	3.3670	2.297	0.044	0.011	0.001	0.15662
2980.00	3.3557	2.297	0.045	0.011	0.001	0.15665
2990.00	3.3445	2.297	0.045	0.011	0.001	0.15660
3000.00	3.3333	2.297	0.045	0.011	0.001	0.15660
3010.00	3.3223	2.297	0.045	0.011	0.001	0.15664
3020.00	3.3113	2.296	0.046	0.011	0.001	0.15657
3030.00	3.3003	2.296	0.046	0.011	0.001	0.15646
3040.00	3.2895	2.295	0.046	0.011	0.001	0.15640
3050.00	3.2787	2.295	0.046	0.011	0.001	0.15635
3060.00	3.2680	2.294	0.046	0.011	0.001	0.15623
3070.00	3.2573	2.293	0.046	0.011	0.001	0.15611
3080.00	3.2468	2.293	0.046	0.011	0.001	0.15605
3090.00	3.2362	2.293	0.045	0.011	0.001	0.15605
3100.00	3.2258	2.292	0.045	0.011	0.001	0.15600
3110.00	3.2154	2.292	0.045	0.011	0.001	0.15593
3120.00	3.2051	2.292	0.045	0.011	0.001	0.15590
3130.00	3.1949	2.292	0.045	0.011	0.001	0.15590
3140.00	3.1847	2.292	0.045	0.011	0.001	0.15589
3150.00	3.1746	2.291	0.046	0.011	0.001	0.15581
3160.00	3.1646	2.290	0.045	0.011	0.001	0.15569
3170.00	3.1546	2.290	0.045	0.011	0.001	0.15562

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.289	0.045	0.011	0.001	0.15555
3190.00	3.1348	2.289	0.045	0.011	0.001	0.15550
3200.00	3.1250	2.288	0.045	0.011	0.001	0.15542
3210.00	3.1153	2.288	0.045	0.011	0.001	0.15537
3220.00	3.1056	2.288	0.044	0.011	0.001	0.15535
3230.00	3.0960	2.288	0.044	0.011	0.001	0.15530
3240.00	3.0864	2.287	0.044	0.011	0.001	0.15521
3250.00	3.0769	2.286	0.044	0.011	0.001	0.15510
3260.00	3.0675	2.286	0.043	0.011	0.001	0.15505
3270.00	3.0581	2.286	0.043	0.011	0.001	0.15505
3280.00	3.0488	2.286	0.043	0.011	0.001	0.15505
3290.00	3.0395	2.286	0.043	0.011	0.001	0.15499
3300.00	3.0303	2.285	0.043	0.011	0.001	0.15490
3310.00	3.0211	2.285	0.043	0.011	0.001	0.15485
3320.00	3.0120	2.284	0.042	0.011	0.001	0.15480
3330.00	3.0030	2.284	0.042	0.011	0.001	0.15475
3340.00	2.9940	2.284	0.042	0.011	0.001	0.15471
3350.00	2.9851	2.284	0.042	0.011	0.001	0.15468
3360.00	2.9762	2.283	0.042	0.011	0.001	0.15456
3370.00	2.9674	2.282	0.042	0.011	0.001	0.15444
3380.00	2.9586	2.281	0.041	0.011	0.001	0.15435
3390.00	2.9499	2.281	0.040	0.011	0.001	0.15435
3400.00	2.9412	2.281	0.040	0.011	0.001	0.15435
3410.00	2.9326	2.281	0.040	0.011	0.001	0.15430
3420.00	2.9240	2.281	0.040	0.011	0.001	0.15425
3430.00	2.9155	2.280	0.040	0.011	0.001	0.15419
3440.00	2.9070	2.280	0.039	0.011	0.001	0.15415
3450.00	2.8986	2.280	0.039	0.011	0.001	0.15415
3460.00	2.8902	2.280	0.039	0.011	0.001	0.15410
3470.00	2.8818	2.279	0.039	0.011	0.001	0.15405
3480.00	2.8736	2.279	0.038	0.011	0.001	0.15394
3490.00	2.8653	2.278	0.038	0.011	0.001	0.15387
3500.00	2.8571	2.278	0.037	0.011	0.001	0.15385
3510.00	2.8490	2.278	0.037	0.011	0.001	0.15380
3520.00	2.8409	2.278	0.036	0.011	0.001	0.15379
3530.00	2.8329	2.277	0.036	0.011	0.001	0.15375
3540.00	2.8249	2.277	0.035	0.011	0.001	0.15370
3550.00	2.8169	2.277	0.035	0.011	0.001	0.15370
3560.00	2.8090	2.277	0.034	0.011	0.001	0.15370
3570.00	2.8011	2.277	0.034	0.011	0.001	0.15370
3580.00	2.7933	2.278	0.033	0.011	0.001	0.15375
3590.00	2.7855	2.278	0.033	0.011	0.001	0.15380
3600.00	2.7778	2.278	0.033	0.011	0.001	0.15378
3610.00	2.7701	2.278	0.033	0.011	0.001	0.15375
3620.00	2.7624	2.278	0.033	0.011	0.001	0.15375
3630.00	2.7548	2.278	0.032	0.011	0.001	0.15376
3640.00	2.7473	2.278	0.033	0.011	0.001	0.15376
3650.00	2.7397	2.278	0.033	0.011	0.001	0.15375
3660.00	2.7322	2.278	0.032	0.011	0.001	0.15375
3670.00	2.7248	2.278	0.033	0.011	0.001	0.15375

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.277	0.033	0.011	0.001	0.15370
3690.00	2.7100	2.277	0.033	0.011	0.001	0.15365
3700.00	2.7027	2.277	0.032	0.011	0.001	0.15360
3710.00	2.6954	2.277	0.032	0.011	0.001	0.15360
3720.00	2.6882	2.277	0.032	0.011	0.001	0.15360
3730.00	2.6810	2.277	0.033	0.011	0.001	0.15360
3740.00	2.6738	2.276	0.033	0.011	0.001	0.15347
3750.00	2.6667	2.275	0.033	0.011	0.001	0.15331
3760.00	2.6596	2.274	0.032	0.011	0.001	0.15325
3770.00	2.6525	2.274	0.031	0.011	0.001	0.15325
3780.00	2.6455	2.274	0.031	0.011	0.001	0.15321
3790.00	2.6385	2.274	0.031	0.011	0.001	0.15320
3800.00	2.6316	2.274	0.031	0.011	0.001	0.15320
3810.00	2.6247	2.274	0.030	0.011	0.001	0.15320
3820.00	2.6178	2.274	0.031	0.011	0.001	0.15318
3830.00	2.6110	2.273	0.031	0.011	0.001	0.15311
3840.00	2.6042	2.273	0.031	0.011	0.001	0.15302
3850.00	2.5974	2.272	0.030	0.011	0.001	0.15294
3860.00	2.5907	2.272	0.030	0.011	0.001	0.15287
3870.00	2.5840	2.272	0.029	0.011	0.001	0.15285
3880.00	2.5773	2.271	0.029	0.011	0.001	0.15280
3890.00	2.5707	2.271	0.029	0.011	0.001	0.15276
3900.00	2.5641	2.270	0.029	0.011	0.001	0.15269
3910.00	2.5575	2.270	0.029	0.011	0.001	0.15261
3920.00	2.5510	2.270	0.028	0.011	0.001	0.15260
3930.00	2.5445	2.270	0.028	0.011	0.001	0.15259
3940.00	2.5381	2.269	0.028	0.011	0.001	0.15249
3950.00	2.5316	2.268	0.027	0.011	0.001	0.15239
3960.00	2.5253	2.268	0.027	0.011	0.001	0.15232
3970.00	2.5189	2.268	0.026	0.011	0.001	0.15235
3980.00	2.5126	2.268	0.026	0.011	0.001	0.15230
3990.00	2.5063	2.267	0.026	0.011	0.001	0.15220
4000.00	2.5000	2.267	0.025	0.011	0.001	0.15215



## 5.7 Zinc Oxide (ZnO)

The measured reflectance and spectral values of  $n$  and  $k$  for the 13mm dia. zinc oxide pellet are presented in Figs. 43-47. The first derivative of the infrared reflectance spectrum is presented in Fig. 48. In the uv-vis-nir reflectance spectrum we note a general decrease in reflectance toward shorter wavelength. This is probably due to an increase in the diffuse reflectance of the surface toward shorter wavelengths.

The measured reflectance and computed values of  $n$  and  $k$  are also presented in tabular form in the following pages.

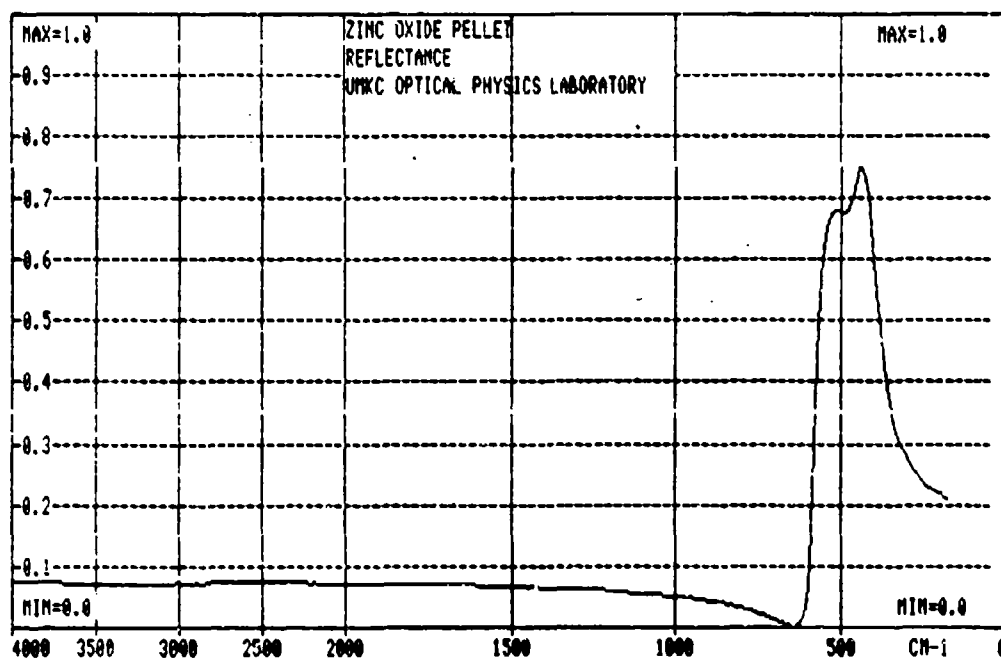


Figure 43. The infrared (4,000–180  $\text{cm}^{-1}$ ) reflectance spectrum of zinc oxide ( $\text{ZnO}$ ).

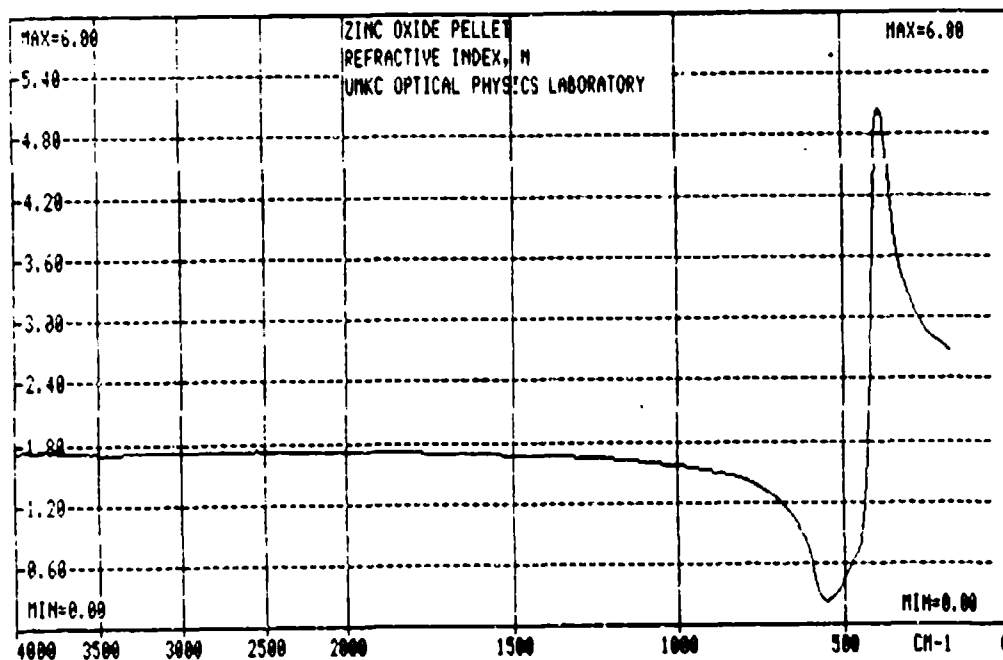


Figure 44. The infrared (4,000–180  $\text{cm}^{-1}$ ) refractive index  $n$  for zinc oxide ( $\text{ZnO}$ ).

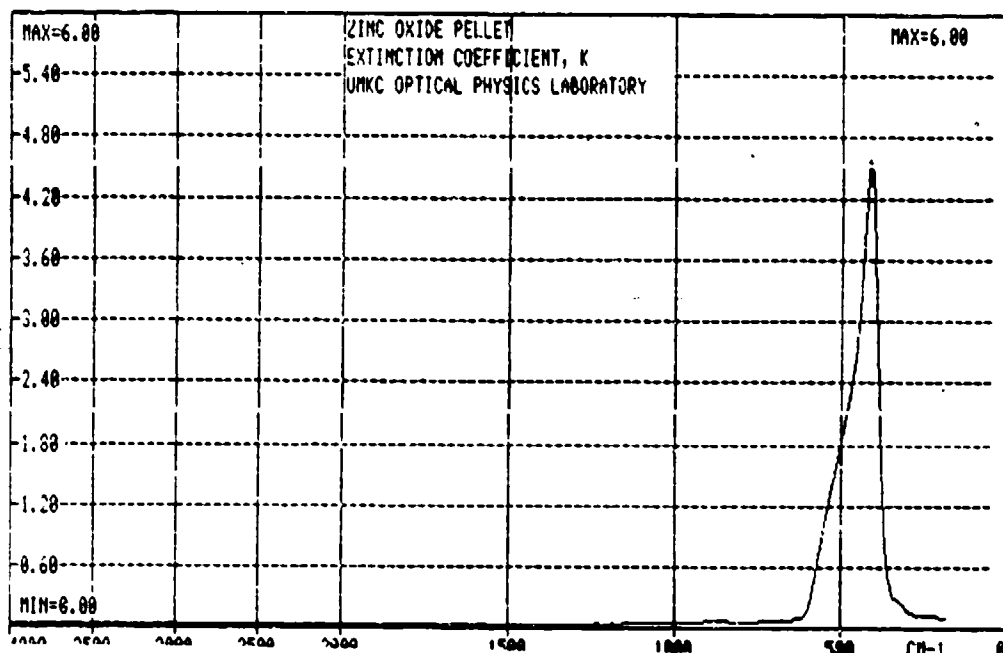


Figure 45. The infrared (4,000-180  $\text{cm}^{-1}$ ) extinction coefficient  $k$  for zinc oxide ( $\text{ZnO}$ ).



Figure 46. The uv-vis-nir (2,500-200 nm) reflectance spectrum of zinc oxide ( $\text{ZnO}$ ).

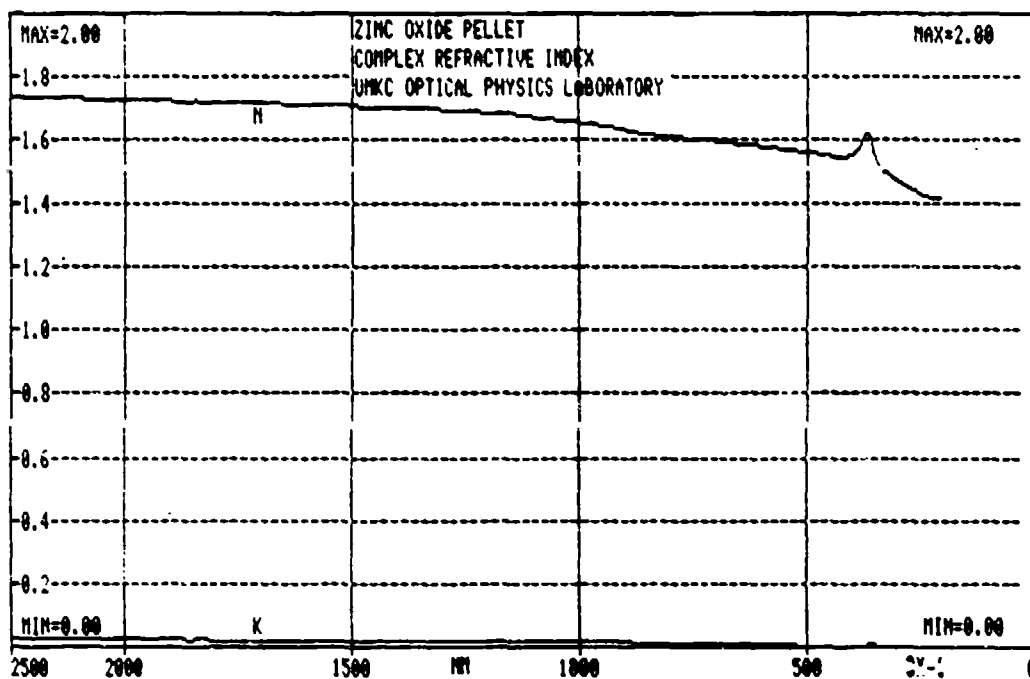


Figure 47. The uv-vis-nir (2,500–210 nm) complex refractive indices  $n$  and  $k$  of zinc oxide ( $\text{ZnO}$ ).

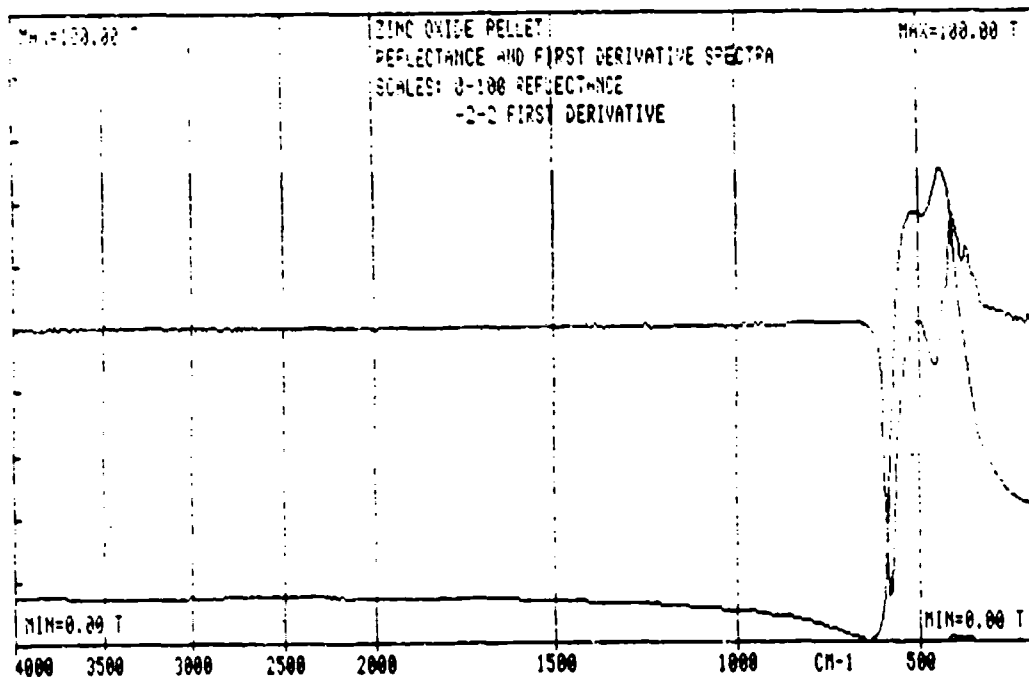


Figure 48. The first derivative of the infrared reflectance spectrum of zinc oxide ( $\text{ZnO}$ ).

WN	WL	N	K	DN	DK	R
180.00	55.5556	2.664	0.121	0.034	0.005	0.20910
190.00	52.6316	2.697	0.109	0.030	0.004	0.21346
200.00	50.0000	2.725	0.108	0.030	0.004	0.21718
210.00	47.6190	2.754	0.124	0.030	0.004	0.22116
220.00	45.4545	2.775	0.129	0.031	0.005	0.22403
230.00	43.4783	2.803	0.132	0.031	0.005	0.22783
240.00	41.6667	2.830	0.135	0.031	0.005	0.23134
250.00	40.0000	2.864	0.127	0.031	0.004	0.23558
260.00	38.4615	2.915	0.127	0.032	0.004	0.24225
270.00	37.0370	2.972	0.133	0.032	0.005	0.24942
280.00	35.7143	3.036	0.147	0.033	0.005	0.25758
290.00	34.4828	3.105	0.162	0.033	0.005	0.26630
300.00	33.3333	3.193	0.182	0.034	0.006	0.27710
310.00	32.2581	3.283	0.222	0.035	0.007	0.28829
320.00	31.2500	3.376	0.256	0.036	0.008	0.29947
330.00	30.3030	3.484	0.289	0.037	0.009	0.31198
340.00	29.4118	3.646	0.301	0.038	0.010	0.32947
350.00	28.5714	3.910	0.366	0.041	0.012	0.35721
360.00	27.7778	4.223	0.533	0.045	0.017	0.38949
370.00	27.0270	4.644	0.838	0.050	0.026	0.43171
380.00	26.3158	4.985	1.505	0.055	0.044	0.47866
390.00	25.6410	5.090	2.304	0.056	0.061	0.52196
400.00	25.0000	4.884	3.404	0.053	0.070	0.57924
410.00	24.3902	3.940	4.458	0.054	0.062	0.64594
420.00	23.8095	2.434	4.628	0.062	0.061	0.70849
430.00	23.2558	1.509	4.071	0.048	0.050	0.73752
440.00	22.7273	1.021	3.510	0.035	0.042	0.75252
450.00	22.2222	0.797	3.017	0.028	0.036	0.74290
460.00	21.7391	0.704	2.659	0.024	0.031	0.71952
470.00	21.2766	0.644	2.400	0.021	0.029	0.69757
480.00	20.8333	0.587	2.199	0.019	0.026	0.68274
490.00	20.4082	0.521	2.026	0.017	0.025	0.67719
500.00	20.0000	0.451	1.861	0.014	0.023	0.67828
510.00	19.6078	0.384	1.693	0.012	0.021	0.68062
520.00	19.2308	0.328	1.522	0.011	0.020	0.68083
530.00	18.8679	0.286	1.350	0.009	0.019	0.67385
540.00	18.5185	0.254	1.179	0.008	0.017	0.65959
550.00	18.1818	0.236	1.001	0.007	0.016	0.63094
560.00	17.8571	0.235	0.818	0.006	0.015	0.57669
570.00	17.5439	0.258	0.621	0.006	0.014	0.48238
580.00	17.2414	0.331	0.421	0.006	0.013	0.33040
590.00	16.9492	0.462	0.250	0.008	0.012	0.16719
600.00	16.6667	0.631	0.152	0.013	0.011	0.06189
610.00	16.3934	0.765	0.125	0.021	0.014	0.02347
620.00	16.1290	0.859	0.110	0.032	0.023	0.00951
630.00	15.8730	0.936	0.097	0.038	0.051	0.00370
640.00	15.6250	1.004	0.089	0.001	0.090	0.00201
650.00	15.3846	1.063	0.086	0.047	0.069	0.00272
660.00	15.1515	1.109	0.084	0.053	0.044	0.00434
670.00	14.9254	1.150	0.083	0.050	0.031	0.00650

WN	WL	N	K	DN	DK	R
680.00	14.7059	1.183	0.081	0.047	0.024	0.00856
690.00	14.4928	1.215	0.075	0.045	0.018	0.01080
700.00	14.2857	1.246	0.076	0.042	0.015	0.01342
710.00	14.0845	1.272	0.073	0.040	0.013	0.01571
720.00	13.8889	1.296	0.073	0.038	0.011	0.01799
730.00	13.6986	1.317	0.071	0.037	0.010	0.01997
740.00	13.5135	1.335	0.069	0.036	0.009	0.02190
750.00	13.3333	1.354	0.064	0.036	0.008	0.02376
760.00	13.1579	1.375	0.062	0.035	0.007	0.02604
770.00	12.9870	1.392	0.062	0.034	0.007	0.02806
780.00	12.8205	1.408	0.063	0.033	0.007	0.02990
790.00	12.6582	1.422	0.062	0.033	0.006	0.03152
800.00	12.5000	1.436	0.063	0.032	0.006	0.03329
810.00	12.3457	1.448	0.062	0.032	0.006	0.03471
820.00	12.1951	1.460	0.062	0.032	0.006	0.03627
830.00	12.0482	1.473	0.062	0.031	0.006	0.03786
840.00	11.9048	1.484	0.066	0.031	0.006	0.03934
850.00	11.7647	1.491	0.067	0.031	0.006	0.04019
860.00	11.6279	1.499	0.069	0.031	0.006	0.04127
870.00	11.4943	1.504	0.069	0.031	0.006	0.04194
880.00	11.3636	1.510	0.069	0.030	0.006	0.04269
890.00	11.2360	1.515	0.067	0.030	0.005	0.04332
900.00	11.1111	1.523	0.065	0.030	0.005	0.04432
910.00	10.9890	1.528	0.066	0.030	0.005	0.04507
920.00	10.8696	1.533	0.062	0.030	0.005	0.04561
930.00	10.7527	1.541	0.061	0.030	0.005	0.04664
940.00	10.6383	1.546	0.061	0.030	0.005	0.04725
950.00	10.5263	1.554	0.059	0.030	0.004	0.04829
960.00	10.4167	1.559	0.061	0.030	0.005	0.04911
970.00	10.3093	1.562	0.060	0.030	0.004	0.04951
980.00	10.2041	1.569	0.059	0.030	0.004	0.05042
990.00	10.1010	1.574	0.062	0.029	0.004	0.05106
1000.00	10.0000	1.574	0.060	0.029	0.004	0.05111
1010.00	9.9010	1.578	0.058	0.029	0.004	0.05161
1020.00	9.8039	1.584	0.057	0.029	0.004	0.05244
1030.00	9.7087	1.586	0.058	0.029	0.004	0.05269
1040.00	9.6154	1.588	0.054	0.029	0.004	0.05284
1050.00	9.5238	1.592	0.052	0.029	0.004	0.05342
1060.00	9.4340	1.597	0.050	0.029	0.003	0.05405
1070.00	9.3458	1.601	0.049	0.029	0.003	0.05458
1080.00	9.2593	1.605	0.049	0.029	0.003	0.05509
1090.00	9.1743	1.608	0.048	0.029	0.003	0.05550
1100.00	9.0909	1.610	0.045	0.029	0.003	0.05586
1110.00	9.0090	1.615	0.044	0.029	0.003	0.05654
1120.00	8.9286	1.618	0.044	0.029	0.003	0.05688
1130.00	8.8496	1.621	0.043	0.029	0.003	0.05733
1140.00	8.7719	1.624	0.043	0.029	0.003	0.05767
1150.00	8.6957	1.627	0.041	0.029	0.003	0.05806
1160.00	8.6207	1.630	0.040	0.029	0.003	0.05857
1170.00	8.5470	1.635	0.039	0.029	0.003	0.05923

WN	WL	N	K	DN	DK	R
1180.00	8.4746	1.638	0.041	0.029	0.003	0.05971
1190.00	8.4034	1.640	0.040	0.029	0.003	0.05990
1200.00	8.3333	1.643	0.040	0.029	0.003	0.06032
1210.00	8.2645	1.644	0.039	0.029	0.003	0.06049
1220.00	8.1967	1.649	0.039	0.029	0.003	0.06123
1230.00	8.1301	1.651	0.042	0.029	0.003	0.06155
1240.00	8.0645	1.649	0.040	0.029	0.003	0.06118
1250.00	8.0000	1.654	0.037	0.029	0.002	0.06181
1260.00	7.9365	1.655	0.039	0.029	0.002	0.06199
1270.00	7.8740	1.657	0.037	0.029	0.002	0.06226
1280.00	7.8125	1.659	0.037	0.028	0.002	0.06262
1290.00	7.7519	1.661	0.037	0.028	0.002	0.06291
1300.00	7.6923	1.663	0.037	0.028	0.002	0.06316
1310.00	7.6336	1.665	0.038	0.028	0.002	0.06347
1320.00	7.5758	1.666	0.037	0.028	0.002	0.06352
1330.00	7.5188	1.667	0.036	0.028	0.002	0.06366
1340.00	7.4627	1.671	0.035	0.028	0.002	0.06432
1350.00	7.4074	1.673	0.037	0.028	0.002	0.06459
1360.00	7.3529	1.673	0.038	0.028	0.002	0.06463
1370.00	7.2993	1.670	0.037	0.028	0.002	0.06419
1380.00	7.2464	1.673	0.034	0.028	0.002	0.06456
1390.00	7.1942	1.677	0.033	0.028	0.002	0.06515
1400.00	7.1429	1.679	0.036	0.028	0.002	0.06541
1410.00	7.0922	1.677	0.034	0.028	0.002	0.06506
1420.00	7.0423	1.682	0.034	0.028	0.002	0.06579
1430.00	6.9930	1.682	0.034	0.028	0.002	0.06578
1440.00	6.9444	1.683	0.034	0.028	0.002	0.06592
1450.00	6.8966	1.681	0.032	0.028	0.002	0.06568
1460.00	6.8493	1.684	0.031	0.028	0.002	0.06609
1470.00	6.8027	1.685	0.031	0.028	0.002	0.06621
1480.00	6.7568	1.688	0.030	0.028	0.002	0.06662
1490.00	6.7114	1.692	0.031	0.028	0.002	0.06718
1500.00	6.6667	1.691	0.031	0.028	0.002	0.06709
1510.00	6.6225	1.694	0.030	0.028	0.002	0.06745
1520.00	6.5789	1.695	0.030	0.028	0.002	0.06761
1530.00	6.5359	1.695	0.030	0.028	0.002	0.06767
1540.00	6.4935	1.699	0.030	0.028	0.002	0.06815
1550.00	6.4516	1.702	0.030	0.028	0.002	0.06862
1560.00	6.4103	1.702	0.033	0.028	0.002	0.06869
1570.00	6.3694	1.699	0.031	0.028	0.002	0.06824
1580.00	6.3291	1.701	0.031	0.028	0.002	0.06856
1590.00	6.2893	1.701	0.031	0.028	0.002	0.06854
1600.00	6.2500	1.702	0.030	0.028	0.002	0.06864
1610.00	6.2112	1.705	0.030	0.028	0.002	0.06909
1620.00	6.1728	1.706	0.030	0.028	0.002	0.06920
1630.00	6.1350	1.706	0.029	0.028	0.002	0.06923
1640.00	6.0976	1.709	0.028	0.028	0.002	0.06964
1650.00	6.0606	1.712	0.031	0.028	0.002	0.07012
1660.00	6.0241	1.710	0.031	0.028	0.002	0.06985
1670.00	5.9880	1.713	0.030	0.028	0.002	0.07017

WN	WL	N	K	DN	DK	R
1680.00	5.9524	1.713	0.031	0.028	0.002	0.07028
1690.00	5.9172	1.712	0.030	0.028	0.002	0.07010
1700.00	5.8824	1.716	0.031	0.028	0.002	0.07062
1710.00	5.8480	1.714	0.032	0.028	0.002	0.07046
1720.00	5.8140	1.713	0.032	0.028	0.002	0.07026
1730.00	5.7803	1.713	0.031	0.028	0.002	0.07029
1740.00	5.7471	1.713	0.030	0.028	0.002	0.07028
1750.00	5.7143	1.713	0.028	0.028	0.002	0.07028
1760.00	5.6818	1.718	0.027	0.028	0.002	0.07088
1770.00	5.6497	1.722	0.028	0.028	0.002	0.07148
1780.00	5.6180	1.723	0.029	0.028	0.002	0.07167
1790.00	5.5866	1.724	0.030	0.028	0.002	0.07179
1800.00	5.5556	1.724	0.030	0.028	0.002	0.07179
1810.00	5.5249	1.726	0.030	0.028	0.002	0.07205
1820.00	5.4945	1.725	0.030	0.028	0.002	0.07199
1830.00	5.4645	1.727	0.030	0.028	0.002	0.07232
1840.00	5.4348	1.729	0.032	0.028	0.002	0.07251
1850.00	5.4054	1.727	0.032	0.028	0.002	0.07224
1860.00	5.3763	1.726	0.031	0.028	0.002	0.07211
1870.00	5.3476	1.729	0.031	0.028	0.002	0.07255
1880.00	5.3191	1.729	0.032	0.028	0.002	0.07257
1890.00	5.2910	1.730	0.032	0.028	0.002	0.07271
1900.00	5.2632	1.730	0.032	0.028	0.002	0.07276
1910.00	5.2356	1.731	0.033	0.028	0.002	0.07283
1920.00	5.2083	1.730	0.033	0.028	0.002	0.07276
1930.00	5.1813	1.731	0.033	0.028	0.002	0.07288
1940.00	5.1546	1.731	0.033	0.028	0.002	0.07279
1950.00	5.1282	1.731	0.033	0.028	0.002	0.07292
1960.00	5.1020	1.733	0.033	0.028	0.002	0.07313
1970.00	5.0761	1.734	0.033	0.028	0.002	0.07327
1980.00	5.0505	1.734	0.034	0.028	0.002	0.07329
1990.00	5.0251	1.734	0.036	0.028	0.002	0.07329
2000.00	5.0000	1.730	0.036	0.028	0.002	0.07270
2010.00	4.9751	1.729	0.034	0.028	0.002	0.07261
2020.00	4.9505	1.729	0.034	0.028	0.002	0.07252
2030.00	4.9261	1.729	0.033	0.028	0.002	0.07249
2040.00	4.9020	1.730	0.033	0.028	0.002	0.07276
2050.00	4.8780	1.731	0.033	0.028	0.002	0.07289
2060.00	4.8544	1.730	0.033	0.028	0.002	0.07267
2070.00	4.8309	1.733	0.032	0.028	0.002	0.07307
2080.00	4.8077	1.732	0.033	0.028	0.002	0.07294
2090.00	4.7847	1.732	0.032	0.028	0.002	0.07299
2100.00	4.7619	1.732	0.033	0.028	0.002	0.07299
2110.00	4.7393	1.731	0.033	0.028	0.002	0.07289
2120.00	4.7170	1.730	0.032	0.028	0.002	0.07271
2130.00	4.6948	1.733	0.032	0.028	0.002	0.07311
2140.00	4.6729	1.732	0.031	0.028	0.002	0.07298
2150.00	4.6512	1.735	0.031	0.028	0.002	0.07349
2160.00	4.6296	1.735	0.032	0.028	0.002	0.07346
2170.00	4.6083	1.735	0.032	0.028	0.002	0.07342



WN	WL	N	K	DN	DK	R
2180.00	4.5872	1.737	0.032	0.028	0.002	0.07368
2190.00	4.5662	1.737	0.032	0.028	0.002	0.07366
2200.00	4.5455	1.736	0.032	0.028	0.002	0.07352
2210.00	4.5249	1.737	0.032	0.028	0.002	0.07368
2220.00	4.5045	1.734	0.032	0.028	0.002	0.07326
2230.00	4.4843	1.736	0.032	0.028	0.002	0.07364
2240.00	4.4643	1.736	0.032	0.028	0.002	0.07363
2250.00	4.4444	1.737	0.031	0.028	0.002	0.07377
2260.00	4.4248	1.738	0.032	0.028	0.002	0.07381
2270.00	4.4053	1.738	0.032	0.028	0.002	0.07381
2280.00	4.3860	1.738	0.032	0.028	0.002	0.07383
2290.00	4.3668	1.739	0.032	0.028	0.002	0.07399
2300.00	4.3478	1.738	0.032	0.028	0.002	0.07392
2310.00	4.3290	1.740	0.032	0.028	0.002	0.07414
2320.00	4.3103	1.741	0.032	0.028	0.002	0.07426
2330.00	4.2918	1.739	0.033	0.028	0.002	0.07406
2340.00	4.2735	1.738	0.032	0.028	0.002	0.07389
2350.00	4.2553	1.739	0.032	0.028	0.002	0.07394
2360.00	4.2373	1.741	0.031	0.028	0.002	0.07430
2370.00	4.2194	1.742	0.032	0.028	0.002	0.07442
2380.00	4.2017	1.741	0.031	0.028	0.002	0.07435
2390.00	4.1841	1.744	0.033	0.028	0.002	0.07473
2400.00	4.1667	1.741	0.032	0.028	0.002	0.07427
2410.00	4.1494	1.742	0.032	0.028	0.002	0.07443
2420.00	4.1322	1.744	0.032	0.028	0.002	0.07477
2430.00	4.1152	1.744	0.033	0.028	0.002	0.07468
2440.00	4.0984	1.743	0.033	0.028	0.002	0.07461
2450.00	4.0816	1.743	0.033	0.028	0.002	0.07455
2460.00	4.0650	1.742	0.033	0.028	0.002	0.07438
2470.00	4.0486	1.742	0.032	0.028	0.002	0.07442
2480.00	4.0323	1.744	0.032	0.028	0.002	0.07474
2490.00	4.0161	1.745	0.033	0.028	0.002	0.07483
2500.00	4.0000	1.743	0.034	0.028	0.002	0.07464
2510.00	3.9841	1.742	0.033	0.028	0.002	0.07451
2520.00	3.9683	1.744	0.033	0.028	0.002	0.07472
2530.00	3.9526	1.744	0.033	0.028	0.002	0.07473
2540.00	3.9370	1.745	0.034	0.028	0.002	0.07492
2550.00	3.9216	1.745	0.034	0.028	0.002	0.07488
2560.00	3.9063	1.744	0.034	0.028	0.002	0.07477
2570.00	3.8911	1.742	0.034	0.028	0.002	0.07443
2580.00	3.8760	1.740	0.034	0.028	0.002	0.07416
2590.00	3.8610	1.742	0.033	0.028	0.002	0.07447
2600.00	3.8462	1.745	0.034	0.028	0.002	0.07491
2610.00	3.8314	1.743	0.034	0.028	0.002	0.07458
2620.00	3.8168	1.740	0.034	0.028	0.002	0.07423
2630.00	3.8023	1.743	0.033	0.028	0.002	0.07456
2640.00	3.7879	1.744	0.034	0.028	0.002	0.07478
2650.00	3.7736	1.742	0.034	0.028	0.002	0.07449
2660.00	3.7594	1.741	0.035	0.028	0.002	0.07429
2670.00	3.7453	1.740	0.034	0.028	0.002	0.07415

WN	WL	N	K	DN	DK	R
2680.00	3.7313	1.743	0.034	0.028	0.002	0.07462
2690.00	3.7175	1.740	0.035	0.028	0.002	0.07417
2700.00	3.7037	1.739	0.034	0.028	0.002	0.07397
2710.00	3.6900	1.740	0.034	0.028	0.002	0.07422
2720.00	3.6765	1.741	0.034	0.028	0.002	0.07438
2730.00	3.6630	1.740	0.035	0.028	0.002	0.07422
2740.00	3.6496	1.739	0.033	0.028	0.002	0.07395
2750.00	3.6364	1.743	0.034	0.028	0.002	0.07467
2760.00	3.6232	1.740	0.034	0.028	0.002	0.07415
2770.00	3.6101	1.741	0.034	0.028	0.002	0.07432
2780.00	3.5971	1.737	0.034	0.028	0.002	0.07377
2790.00	3.5842	1.740	0.033	0.028	0.002	0.07412
2800.00	3.5714	1.741	0.035	0.028	0.002	0.07433
2810.00	3.5587	1.736	0.034	0.028	0.002	0.07354
2820.00	3.5461	1.738	0.033	0.028	0.002	0.07384
2830.00	3.5336	1.740	0.035	0.028	0.002	0.07413
2840.00	3.5211	1.736	0.035	0.028	0.002	0.07358
2850.00	3.5088	1.734	0.034	0.028	0.002	0.07336
2860.00	3.4965	1.732	0.033	0.028	0.002	0.07304
2870.00	3.4843	1.734	0.033	0.028	0.002	0.07330
2880.00	3.4722	1.736	0.033	0.028	0.002	0.07363
2890.00	3.4602	1.737	0.033	0.028	0.002	0.07369
2900.00	3.4483	1.734	0.033	0.028	0.002	0.07328
2910.00	3.4364	1.735	0.033	0.028	0.002	0.07344
2920.00	3.4247	1.731	0.033	0.028	0.002	0.07290
2930.00	3.4130	1.731	0.032	0.028	0.002	0.07291
2940.00	3.4014	1.732	0.032	0.028	0.002	0.07300
2950.00	3.3898	1.735	0.032	0.028	0.002	0.07345
2960.00	3.3784	1.735	0.032	0.028	0.002	0.07339
2970.00	3.3670	1.735	0.032	0.028	0.002	0.07337
2980.00	3.3557	1.733	0.032	0.028	0.002	0.07309
2990.00	3.3445	1.734	0.031	0.028	0.002	0.07327
3000.00	3.3333	1.736	0.032	0.028	0.002	0.07362
3010.00	3.3223	1.738	0.032	0.028	0.002	0.07381
3020.00	3.3113	1.737	0.033	0.028	0.002	0.07373
3030.00	3.3003	1.733	0.032	0.028	0.002	0.07314
3040.00	3.2895	1.735	0.032	0.028	0.002	0.07336
3050.00	3.2787	1.736	0.032	0.028	0.002	0.07351
3060.00	3.2680	1.735	0.033	0.028	0.002	0.07348
3070.00	3.2573	1.733	0.033	0.028	0.002	0.07311
3080.00	3.2468	1.730	0.032	0.028	0.002	0.07273
3090.00	3.2362	1.733	0.032	0.028	0.002	0.07317
3100.00	3.2258	1.733	0.033	0.028	0.002	0.07311
3110.00	3.2154	1.729	0.032	0.028	0.002	0.07249
3120.00	3.2051	1.729	0.031	0.028	0.002	0.07256
3130.00	3.1949	1.732	0.032	0.028	0.002	0.07301
3140.00	3.1847	1.730	0.032	0.028	0.002	0.07271
3150.00	3.1746	1.728	0.031	0.028	0.002	0.07246
3160.00	3.1646	1.730	0.031	0.028	0.002	0.07271
3170.00	3.1546	1.731	0.032	0.028	0.002	0.07287

WN	WL	N	K	DN	DK	R
3180.00	3.1447	1.729	0.032	0.028	0.002	0.07249
3190.00	3.1348	1.728	0.031	0.028	0.002	0.07239
3200.00	3.1250	1.727	0.031	0.028	0.002	0.07227
3210.00	3.1153	1.728	0.031	0.028	0.002	0.07234
3220.00	3.1056	1.726	0.032	0.028	0.002	0.07218
3230.00	3.0960	1.726	0.031	0.028	0.002	0.07212
3240.00	3.0864	1.725	0.032	0.028	0.002	0.07197
3250.00	3.0769	1.722	0.030	0.028	0.002	0.07153
3260.00	3.0675	1.724	0.030	0.028	0.002	0.07185
3270.00	3.0581	1.726	0.030	0.028	0.002	0.07205
3280.00	3.0488	1.722	0.030	0.028	0.002	0.07160
3290.00	3.0395	1.725	0.030	0.028	0.002	0.07199
3300.00	3.0303	1.721	0.030	0.028	0.002	0.07143
3310.00	3.0211	1.723	0.029	0.028	0.002	0.07164
3320.00	3.0120	1.724	0.030	0.028	0.002	0.07178
3330.00	3.0030	1.721	0.029	0.028	0.002	0.07138
3340.00	2.9940	1.723	0.029	0.028	0.002	0.07163
3350.00	2.9851	1.721	0.030	0.028	0.002	0.07143
3360.00	2.9762	1.717	0.029	0.028	0.002	0.07075
3370.00	2.9674	1.717	0.028	0.028	0.002	0.07076
3380.00	2.9586	1.718	0.028	0.028	0.002	0.07098
3390.00	2.9499	1.717	0.027	0.028	0.002	0.07082
3400.00	2.9412	1.718	0.027	0.028	0.002	0.07087
3410.00	2.9326	1.719	0.027	0.028	0.002	0.07101
3420.00	2.9240	1.717	0.027	0.028	0.002	0.07079
3430.00	2.9155	1.716	0.026	0.028	0.002	0.07066
3440.00	2.9070	1.716	0.025	0.028	0.002	0.07059
3450.00	2.8986	1.721	0.025	0.028	0.001	0.07130
3460.00	2.8902	1.720	0.025	0.028	0.002	0.07123
3470.00	2.8818	1.719	0.025	0.028	0.002	0.07106
3480.00	2.8736	1.719	0.025	0.028	0.001	0.07107
3490.00	2.8653	1.720	0.025	0.028	0.001	0.07126
3500.00	2.8571	1.720	0.024	0.028	0.001	0.07123
3510.00	2.8490	1.720	0.024	0.028	0.001	0.07126
3520.00	2.8409	1.721	0.024	0.028	0.001	0.07134
3530.00	2.8329	1.721	0.024	0.028	0.001	0.07131
3540.00	2.8249	1.721	0.024	0.028	0.001	0.07128
3550.00	2.8169	1.719	0.023	0.028	0.001	0.07104
3560.00	2.8090	1.722	0.022	0.028	0.001	0.07141
3570.00	2.8011	1.726	0.022	0.028	0.001	0.07202
3580.00	2.7933	1.725	0.023	0.028	0.001	0.07189
3590.00	2.7855	1.723	0.022	0.028	0.001	0.07160
3600.00	2.7778	1.726	0.022	0.028	0.001	0.07199
3610.00	2.7701	1.726	0.022	0.028	0.001	0.07212
3620.00	2.7624	1.730	0.021	0.028	0.001	0.07264
3630.00	2.7548	1.731	0.022	0.028	0.001	0.07281
3640.00	2.7473	1.732	0.022	0.028	0.001	0.07290
3650.00	2.7397	1.733	0.022	0.028	0.001	0.07302
3660.00	2.7322	1.732	0.022	0.028	0.001	0.07295
3670.00	2.7248	1.735	0.022	0.028	0.001	0.07338

WN	WL	N	K	DN	DK	R
3680.00	2.7174	1.734	0.023	0.028	0.001	0.07326
3690.00	2.7100	1.734	0.022	0.028	0.001	0.07322
3700.00	2.7027	1.735	0.021	0.028	0.001	0.07342
3710.00	2.6954	1.739	0.021	0.028	0.001	0.07389
3720.00	2.6882	1.745	0.022	0.028	0.001	0.07481
3730.00	2.6810	1.747	0.023	0.028	0.001	0.07509
3740.00	2.6738	1.748	0.024	0.028	0.001	0.07531
3750.00	2.6667	1.744	0.025	0.028	0.001	0.07465
3760.00	2.6596	1.742	0.024	0.028	0.001	0.07445
3770.00	2.6525	1.746	0.024	0.028	0.001	0.07498
3780.00	2.6455	1.745	0.025	0.028	0.001	0.07477
3790.00	2.6385	1.746	0.024	0.028	0.001	0.07499
3800.00	2.6316	1.748	0.025	0.028	0.001	0.07530
3810.00	2.6247	1.747	0.025	0.028	0.001	0.07507
3820.00	2.6178	1.746	0.026	0.028	0.001	0.07499
3830.00	2.6110	1.743	0.026	0.028	0.001	0.07462
3840.00	2.6042	1.747	0.026	0.028	0.001	0.07519
3850.00	2.5974	1.744	0.026	0.028	0.002	0.07466
3860.00	2.5907	1.747	0.026	0.028	0.002	0.07512
3870.00	2.5840	1.743	0.027	0.028	0.002	0.07453
3880.00	2.5773	1.744	0.026	0.028	0.001	0.07464
3890.00	2.5707	1.743	0.026	0.028	0.002	0.07449
3900.00	2.5641	1.745	0.026	0.028	0.001	0.07478
3910.00	2.5575	1.744	0.027	0.028	0.002	0.07466
3920.00	2.5510	1.745	0.026	0.028	0.001	0.07485
3930.00	2.5445	1.746	0.027	0.028	0.002	0.07504
3940.00	2.5381	1.745	0.027	0.028	0.002	0.07484
3950.00	2.5316	1.745	0.027	0.028	0.002	0.07485
3960.00	2.5253	1.745	0.027	0.028	0.002	0.07480
3970.00	2.5189	1.743	0.027	0.028	0.002	0.07459
3980.00	2.5126	1.745	0.028	0.028	0.002	0.07487
3990.00	2.5063	1.742	0.028	0.028	0.002	0.07438
4000.00	2.5000	1.740	0.028	0.028	0.002	0.07407
4016.06	2.4900	1.739	0.027	0.028	0.002	0.07402
4032.26	2.4800	1.739	0.027	0.028	0.002	0.07395
4048.58	2.4700	1.739	0.027	0.028	0.002	0.07395
4065.04	2.4600	1.739	0.027	0.028	0.002	0.07395
4081.63	2.4500	1.738	0.027	0.028	0.002	0.07387
4098.36	2.4400	1.738	0.027	0.028	0.002	0.07380
4115.23	2.4300	1.738	0.027	0.028	0.002	0.07380
4132.23	2.4200	1.738	0.027	0.028	0.002	0.07380
4149.38	2.4100	1.738	0.027	0.028	0.002	0.07380
4166.67	2.4000	1.737	0.027	0.028	0.002	0.07375
4184.10	2.3900	1.737	0.027	0.028	0.002	0.07365
4201.68	2.3800	1.736	0.027	0.028	0.002	0.07361
4219.41	2.3700	1.736	0.027	0.028	0.002	0.07360
4237.29	2.3600	1.736	0.027	0.028	0.002	0.07360
4255.32	2.3500	1.736	0.027	0.028	0.002	0.07350
4273.50	2.3400	1.736	0.027	0.028	0.002	0.07350
4291.85	2.3300	1.735	0.027	0.028	0.002	0.07346

WN	WL	N	K	DN	DK	R
4310.34	2.3200	1.735	0.027	0.028	0.002	0.07345
4329.00	2.3100	1.735	0.027	0.028	0.002	0.07340
4347.83	2.3000	1.735	0.027	0.028	0.002	0.07340
4366.81	2.2900	1.734	0.027	0.028	0.002	0.07331
4385.96	2.2800	1.734	0.026	0.028	0.002	0.07328
4405.29	2.2700	1.734	0.026	0.028	0.002	0.07325
4424.78	2.2600	1.734	0.026	0.028	0.002	0.07321
4444.44	2.2500	1.734	0.026	0.028	0.002	0.07320
4464.29	2.2400	1.734	0.026	0.028	0.002	0.07319
4484.30	2.2300	1.733	0.026	0.028	0.002	0.07310
4504.50	2.2200	1.733	0.026	0.028	0.002	0.07312
4524.89	2.2100	1.733	0.026	0.028	0.002	0.07311
4545.45	2.2000	1.733	0.026	0.028	0.002	0.07305
4566.21	2.1900	1.733	0.026	0.028	0.002	0.07305
4587.16	2.1800	1.733	0.026	0.028	0.002	0.07309
4608.29	2.1700	1.732	0.026	0.028	0.002	0.07295
4629.63	2.1600	1.732	0.026	0.028	0.002	0.07295
4651.16	2.1500	1.732	0.026	0.028	0.002	0.07295
4672.90	2.1400	1.732	0.026	0.028	0.002	0.07295
4694.84	2.1300	1.731	0.026	0.028	0.002	0.07286
4716.98	2.1200	1.731	0.026	0.028	0.002	0.07275
4739.34	2.1100	1.730	0.026	0.028	0.002	0.07270
4761.90	2.1000	1.730	0.026	0.028	0.002	0.07270
4784.69	2.0900	1.731	0.026	0.028	0.002	0.07275
4807.69	2.0800	1.730	0.026	0.028	0.002	0.07272
4830.92	2.0700	1.730	0.026	0.028	0.002	0.07270
4854.37	2.0600	1.730	0.026	0.028	0.002	0.07268
4878.05	2.0500	1.730	0.026	0.028	0.002	0.07268
4901.96	2.0400	1.729	0.026	0.028	0.002	0.07257
4926.11	2.0300	1.729	0.026	0.028	0.002	0.07250
4950.50	2.0200	1.728	0.026	0.028	0.002	0.07243
4975.12	2.0100	1.728	0.025	0.028	0.001	0.07237
5000.00	2.0000	1.728	0.025	0.028	0.001	0.07236
5025.13	1.9900	1.728	0.025	0.028	0.001	0.07240
5050.51	1.9800	1.728	0.025	0.028	0.001	0.07242
5076.14	1.9700	1.728	0.025	0.028	0.001	0.07230
5102.04	1.9600	1.728	0.025	0.028	0.001	0.07230
5128.21	1.9500	1.728	0.025	0.028	0.001	0.07229
5154.64	1.9400	1.727	0.025	0.028	0.001	0.07218
5181.35	1.9300	1.726	0.025	0.028	0.001	0.07212
5208.33	1.9200	1.726	0.025	0.028	0.001	0.07206
5235.60	1.9100	1.725	0.025	0.028	0.001	0.07199
5263.16	1.9000	1.725	0.025	0.028	0.001	0.07190
5291.01	1.8900	1.724	0.025	0.028	0.001	0.07181
5319.15	1.8800	1.723	0.025	0.028	0.001	0.07162
5347.59	1.8700	1.722	0.025	0.028	0.001	0.07143
5376.34	1.8600	1.722	0.024	0.028	0.001	0.07145
5405.41	1.8500	1.724	0.024	0.028	0.001	0.07171
5434.78	1.8400	1.725	0.025	0.028	0.001	0.07188
5464.48	1.8300	1.723	0.025	0.028	0.001	0.07169

WN	WL	N	K	DN	DK	R
5494.51	1.8200	1.721	0.025	0.028	0.001	0.07134
5524.86	1.8100	1.720	0.024	0.028	0.001	0.07126
5555.56	1.8000	1.722	0.024	0.028	0.001	0.07148
5586.59	1.7900	1.723	0.024	0.028	0.001	0.07159
5617.98	1.7800	1.722	0.024	0.028	0.001	0.07150
5649.72	1.7700	1.722	0.024	0.028	0.001	0.07143
5681.82	1.7600	1.721	0.024	0.028	0.001	0.07135
5714.29	1.7500	1.721	0.024	0.028	0.001	0.07129
5747.13	1.7400	1.720	0.024	0.028	0.001	0.07118
5780.35	1.7300	1.720	0.024	0.028	0.001	0.07114
5813.95	1.7200	1.719	0.024	0.028	0.001	0.07110
5847.95	1.7100	1.718	0.024	0.028	0.001	0.07095
5882.35	1.7000	1.718	0.024	0.028	0.001	0.07085
5917.16	1.6900	1.717	0.024	0.028	0.001	0.07083
5952.38	1.6800	1.717	0.024	0.028	0.001	0.07078
5988.02	1.6700	1.717	0.024	0.028	0.001	0.07074
6024.10	1.6600	1.717	0.024	0.028	0.001	0.07070
6060.61	1.6500	1.716	0.024	0.028	0.001	0.07060
6097.56	1.6400	1.716	0.024	0.028	0.001	0.07055
6134.97	1.6300	1.715	0.024	0.028	0.001	0.07047
6172.84	1.6200	1.714	0.024	0.028	0.001	0.07040
6211.18	1.6100	1.714	0.024	0.028	0.001	0.07040
6250.00	1.6000	1.714	0.024	0.028	0.001	0.07034
6289.31	1.5900	1.712	0.024	0.028	0.001	0.07004
6329.11	1.5800	1.712	0.023	0.028	0.001	0.06998
6369.43	1.5700	1.713	0.023	0.028	0.001	0.07019
6410.26	1.5600	1.713	0.023	0.028	0.001	0.07014
6451.61	1.5500	1.712	0.023	0.028	0.001	0.07002
6493.51	1.5400	1.709	0.023	0.028	0.001	0.06960
6535.95	1.5300	1.709	0.023	0.028	0.001	0.06959
6578.95	1.5200	1.711	0.023	0.028	0.001	0.06984
6622.52	1.5100	1.710	0.023	0.028	0.001	0.06979
6666.67	1.5000	1.709	0.023	0.028	0.001	0.06965
6711.41	1.4900	1.709	0.023	0.028	0.001	0.06955
6756.76	1.4800	1.708	0.023	0.028	0.001	0.06950
6802.72	1.4700	1.708	0.023	0.028	0.001	0.06948
6849.32	1.4600	1.707	0.023	0.028	0.001	0.06936
6896.55	1.4500	1.707	0.023	0.028	0.001	0.06925
6944.44	1.4400	1.706	0.023	0.028	0.001	0.06918
6993.01	1.4300	1.705	0.023	0.028	0.001	0.06897
7042.25	1.4200	1.704	0.022	0.028	0.001	0.06892
7092.20	1.4100	1.704	0.022	0.028	0.001	0.06888
7142.86	1.4000	1.703	0.022	0.028	0.001	0.06878
7194.24	1.3900	1.702	0.022	0.028	0.001	0.06865
7246.38	1.3800	1.702	0.022	0.028	0.001	0.06863
7299.27	1.3700	1.701	0.022	0.028	0.001	0.06852
7352.94	1.3600	1.701	0.022	0.028	0.001	0.06840
7407.41	1.3500	1.700	0.022	0.028	0.001	0.06828
7462.69	1.3400	1.699	0.022	0.028	0.001	0.06820
7518.80	1.3300	1.698	0.022	0.028	0.001	0.06806

WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.697	0.022	0.028	0.001	0.06788
7633.59	1.3100	1.697	0.022	0.028	0.001	0.06785
7692.31	1.3000	1.696	0.022	0.028	0.001	0.06772
7751.94	1.2900	1.695	0.022	0.028	0.001	0.06760
7812.50	1.2800	1.695	0.022	0.028	0.001	0.06752
7874.02	1.2700	1.694	0.022	0.028	0.001	0.06739
7936.51	1.2600	1.693	0.021	0.028	0.001	0.06728
8000.00	1.2500	1.692	0.021	0.028	0.001	0.06713
8064.52	1.2400	1.691	0.021	0.028	0.001	0.06705
8130.08	1.2300	1.690	0.021	0.028	0.001	0.06693
8196.72	1.2200	1.689	0.021	0.028	0.001	0.06677
8264.46	1.2100	1.688	0.021	0.028	0.001	0.06660
8333.33	1.2000	1.687	0.021	0.028	0.001	0.06641
8403.36	1.1900	1.685	0.021	0.028	0.001	0.06619
8474.58	1.1800	1.684	0.021	0.028	0.001	0.06603
8547.01	1.1700	1.683	0.021	0.028	0.001	0.06589
8620.69	1.1600	1.682	0.021	0.028	0.001	0.06566
8695.65	1.1500	1.681	0.021	0.028	0.001	0.06558
8771.93	1.1400	1.680	0.021	0.028	0.001	0.06540
8849.56	1.1300	1.678	0.021	0.028	0.001	0.06516
8928.57	1.1200	1.675	0.020	0.028	0.001	0.06472
9009.01	1.1100	1.673	0.020	0.028	0.001	0.06448
9090.91	1.1000	1.672	0.020	0.028	0.001	0.06424
9174.31	1.0900	1.671	0.020	0.028	0.001	0.06408
9259.26	1.0800	1.669	0.020	0.028	0.001	0.06384
9345.79	1.0700	1.668	0.020	0.028	0.001	0.06369
9433.96	1.0600	1.666	0.019	0.028	0.001	0.06346
9523.81	1.0500	1.664	0.019	0.028	0.001	0.06321
9615.38	1.0400	1.663	0.019	0.029	0.001	0.06296
9708.74	1.0300	1.662	0.019	0.029	0.001	0.06279
9803.92	1.0200	1.659	0.019	0.029	0.001	0.06249
9900.99	1.0100	1.658	0.019	0.029	0.001	0.06225
10000.00	1.0000	1.656	0.019	0.029	0.001	0.06198
10101.01	0.9900	1.654	0.018	0.029	0.001	0.06173
10204.08	0.9800	1.652	0.018	0.029	0.001	0.06144
10309.28	0.9700	1.650	0.018	0.029	0.001	0.06117
10416.67	0.9600	1.648	0.018	0.029	0.001	0.06091
10526.32	0.9500	1.646	0.018	0.029	0.001	0.06065
10638.30	0.9400	1.643	0.018	0.029	0.001	0.06021
10752.69	0.9300	1.641	0.017	0.029	0.001	0.05984
10869.57	0.9200	1.638	0.017	0.029	0.001	0.05950
10989.01	0.9100	1.636	0.017	0.029	0.001	0.05918
11111.11	0.9000	1.633	0.017	0.029	0.001	0.05873
11235.96	0.8900	1.630	0.017	0.029	0.001	0.05833
11363.64	0.8800	1.627	0.016	0.029	0.001	0.05791
11494.25	0.8700	1.624	0.016	0.029	0.001	0.05749
11627.91	0.8600	1.622	0.016	0.029	0.001	0.05715
11764.71	0.8500	1.619	0.015	0.029	0.001	0.05676
11904.76	0.8400	1.617	0.015	0.029	0.001	0.05651
12048.19	0.8300	1.616	0.015	0.029	0.001	0.05633

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.614	0.014	0.029	0.001	0.05602
12345.68	0.8100	1.612	0.014	0.029	0.001	0.05586
12500.00	0.8000	1.612	0.014	0.029	0.001	0.05575
12658.23	0.7900	1.610	0.014	0.029	0.001	0.05558
12820.51	0.7800	1.609	0.014	0.029	0.001	0.05540
12987.01	0.7700	1.608	0.013	0.029	0.001	0.05519
13157.89	0.7600	1.606	0.013	0.029	0.001	0.05494
13333.33	0.7500	1.604	0.013	0.029	0.001	0.05469
13513.51	0.7400	1.602	0.013	0.029	0.001	0.05444
13698.63	0.7300	1.601	0.012	0.029	0.001	0.05428
13888.89	0.7200	1.599	0.012	0.029	0.001	0.05400
14084.51	0.7100	1.597	0.012	0.029	0.001	0.05379
14285.71	0.7000	1.596	0.012	0.029	0.001	0.05355
14492.75	0.6900	1.594	0.012	0.029	0.001	0.05327
14705.88	0.6800	1.592	0.011	0.029	0.001	0.05304
14925.37	0.6700	1.590	0.011	0.029	0.001	0.05276
15151.52	0.6600	1.588	0.011	0.029	0.001	0.05251
15384.62	0.6500	1.587	0.011	0.030	0.001	0.05236
15625.00	0.6400	1.586	0.011	0.030	0.001	0.05223
15873.02	0.6300	1.584	0.010	0.030	0.001	0.05199
16129.03	0.6200	1.583	0.010	0.030	0.001	0.05175
16393.44	0.6100	1.581	0.010	0.030	0.001	0.05149
16666.67	0.6000	1.579	0.010	0.030	0.001	0.05127
16949.15	0.5900	1.577	0.010	0.030	0.001	0.05100
17241.38	0.5800	1.575	0.010	0.030	0.001	0.05076
17543.86	0.5700	1.573	0.009	0.030	0.001	0.05047
17857.14	0.5600	1.571	0.009	0.030	0.001	0.05017
18181.82	0.5500	1.570	0.009	0.030	0.001	0.04998
18518.52	0.5400	1.568	0.009	0.030	0.001	0.04969
18867.92	0.5300	1.566	0.009	0.030	0.001	0.04943
19230.77	0.5200	1.563	0.008	0.030	0.001	0.04907
19607.84	0.5100	1.561	0.008	0.030	0.001	0.04886
20000.00	0.5000	1.560	0.008	0.030	0.001	0.04870
20408.16	0.4900	1.559	0.008	0.030	0.001	0.04846
20833.33	0.4800	1.556	0.008	0.030	0.001	0.04811
21276.60	0.4700	1.553	0.007	0.030	0.001	0.04770
21739.13	0.4600	1.550	0.007	0.030	0.001	0.04732
22222.22	0.4500	1.548	0.007	0.030	0.001	0.04704
22727.27	0.4400	1.547	0.007	0.030	0.001	0.04684
23255.81	0.4300	1.546	0.006	0.030	0.000	0.04675
23809.52	0.4200	1.547	0.006	0.030	0.000	0.04684
24390.24	0.4100	1.550	0.006	0.030	0.000	0.04730
25000.00	0.4000	1.557	0.006	0.030	0.000	0.04827
25641.03	0.3900	1.572	0.006	0.030	0.000	0.05031
26315.79	0.3800	1.614	0.006	0.029	0.000	0.05603
27027.03	0.3700	1.627	0.009	0.029	0.001	0.05789
27777.78	0.3600	1.565	0.010	0.030	0.001	0.04933
28571.43	0.3500	1.523	0.008	0.031	0.001	0.04373
29411.76	0.3400	1.508	0.007	0.031	0.001	0.04177
30303.03	0.3300	1.499	0.007	0.031	0.001	0.04059



## ZINC OXIDE PELLET

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WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.486	0.006	0.032	0.001	0.03894
32258.06	0.3100	1.476	0.006	0.032	0.001	0.03765
33333.33	0.3000	1.469	0.005	0.032	0.000	0.03667
34482.76	0.2900	1.459	0.005	0.032	0.000	0.03548
35714.29	0.2800	1.451	0.005	0.033	0.000	0.03447
37037.04	0.2700	1.444	0.004	0.033	0.000	0.03355
38461.54	0.2600	1.436	0.004	0.033	0.000	0.03267
40000.00	0.2500	1.430	0.004	0.033	0.000	0.03194
41666.67	0.2400	1.425	0.003	0.033	0.000	0.03126
43478.26	0.2300	1.421	0.003	0.034	0.000	0.03075
45454.55	0.2200	1.418	0.003	0.034	0.000	0.03041
47619.05	0.2100	1.417	0.003	0.034	0.000	0.03031

## 5.8 Copper and Brass

The measured reflectance spectra and computed values of  $n$  and  $k$  for the copper and brass materials are presented graphically in the following figures:

Copper	Figs. 49-52,
Brass 90Cu/10Zn	Figs. 54-57,
Brass 85Cu/15Zn	Figs. 59-62, and
Brass 70Cu/30Zn	Figs. 64-67.

Tabulated values of the reflectance and of  $n$  and  $k$  are presented immediately after the graphs for each material in the following pages. Note that in the tables that the uncertainties  $\Delta n$  and  $\Delta k$  for  $n$  and  $k$ , as for all the metallic materials, are relatively large. This is due to small uncertainties in the measured reflectance producing large uncertainties  $\Delta k$  and  $\Delta n$ , and is characteristic of all mathematical algorithms that use the Fresnel reflectance equations to determine  $n$  and  $k$  for highly reflecting materials.

The first derivative of the infrared reflectance spectra of copper and the brass samples are presented in Figs. 53, 58, 63, and 68. We have not determined the source of the structure in the first derivative spectra.

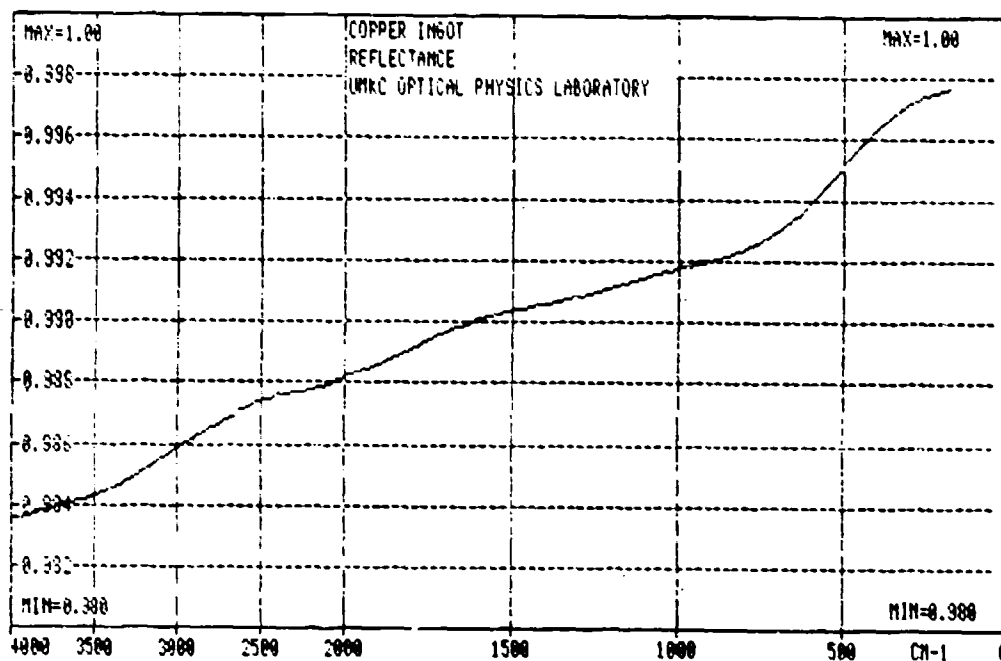


Figure 49. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of copper.

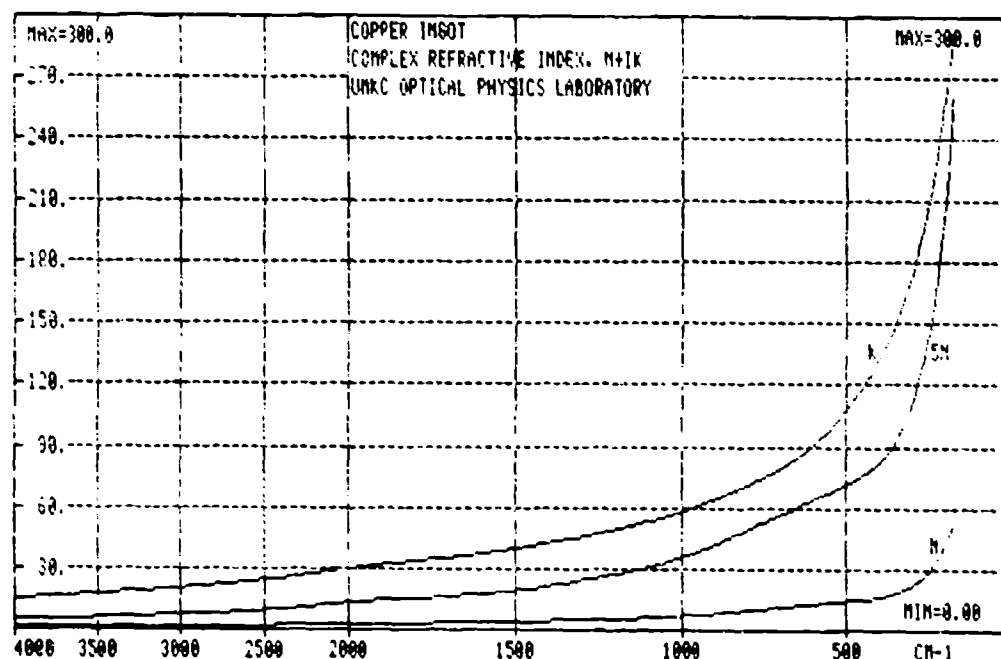


Figure 50. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for copper.

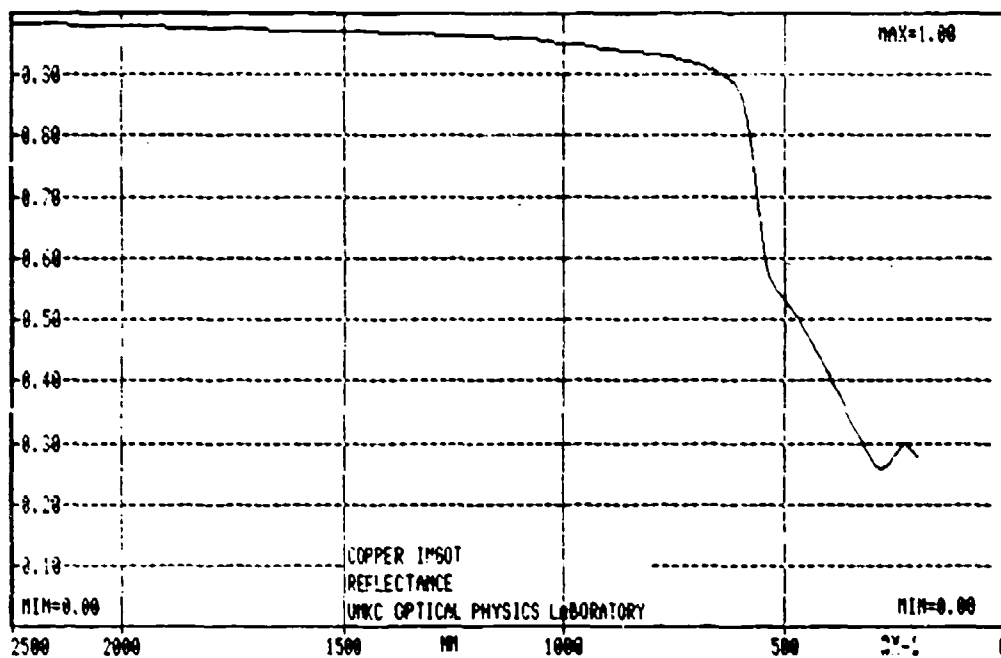


Figure 51. The uv-vis-nir (2,500-200 nm) reflectance spectrum of copper.

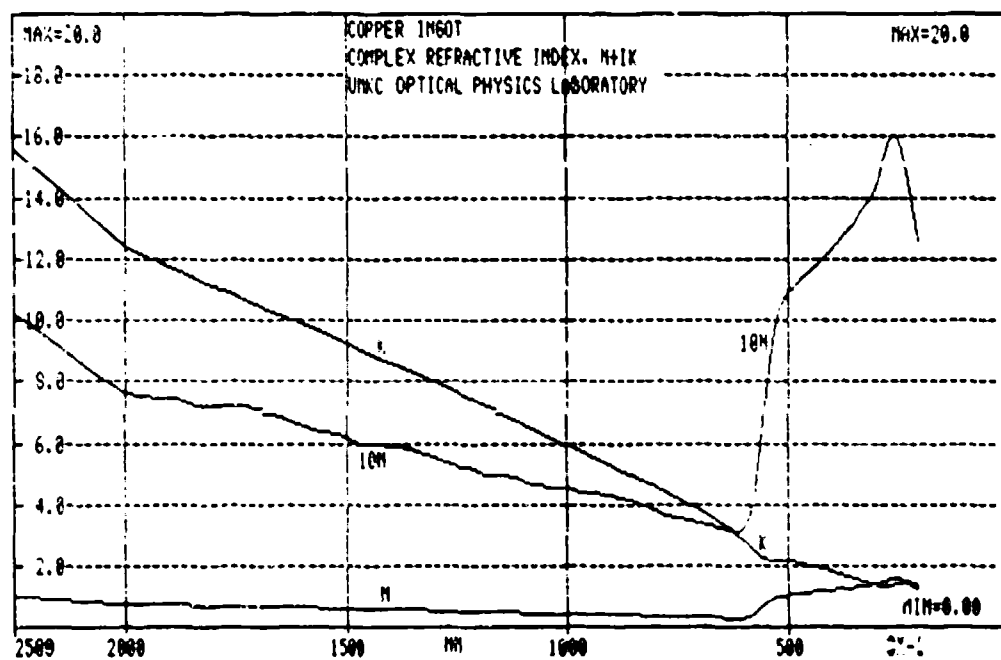


Figure 52. The uv-vis-nir (2,500-210 nm) complex refractive indices  $n$  and  $k$  for copper.

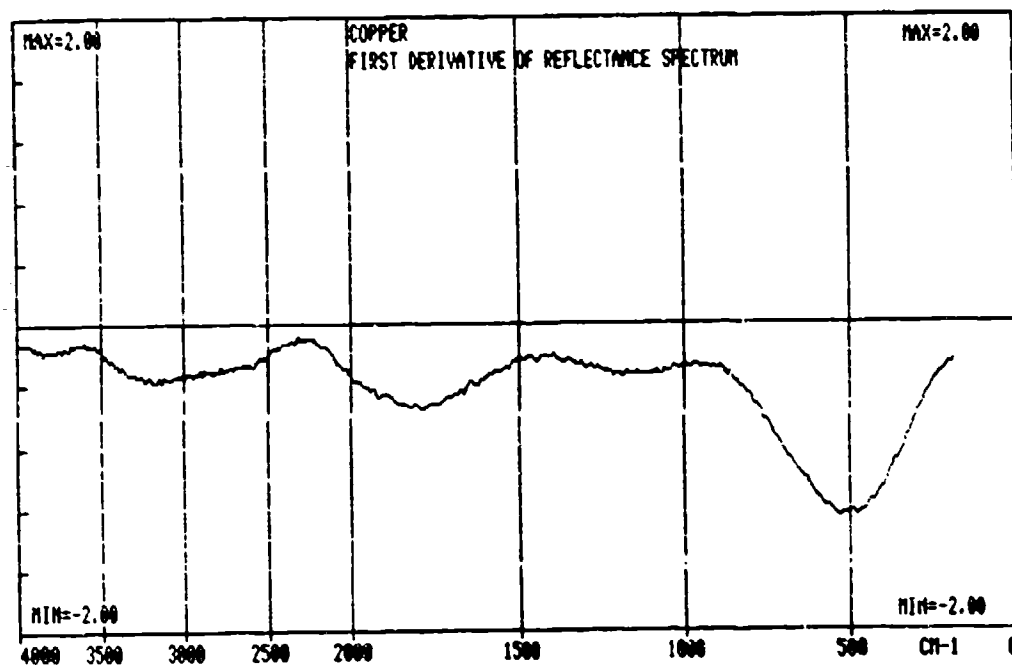


Figure 53. The first derivative of the infrared reflectance spectrum of copper.

WN	WL	N	K	DN	DK	R
180.00	55.5556	54.058	297.306	216.105	83.671	0.99765
190.00	52.6316	48.419	281.859	197.470	72.261	0.99765
200.00	50.0000	44.324	267.743	178.586	63.064	0.99761
210.00	47.6190	40.571	255.237	162.655	55.245	0.99759
220.00	45.4545	37.361	243.743	148.612	48.778	0.99756
230.00	43.4783	34.533	233.188	136.245	43.310	0.99753
240.00	41.6667	32.172	223.454	125.270	38.819	0.99749
250.00	40.0000	30.080	214.517	115.585	34.983	0.99746
260.00	38.4615	28.268	206.248	106.951	31.732	0.99741
270.00	37.0370	26.632	198.573	99.228	28.899	0.99737
280.00	35.7143	25.258	191.424	92.277	26.520	0.99731
290.00	34.4828	24.013	184.793	86.051	24.431	0.99726
300.00	33.3333	22.922	178.602	80.425	22.620	0.99719
310.00	32.2581	21.918	172.804	75.327	21.002	0.99713
320.00	31.2500	21.072	167.359	70.682	19.620	0.99706
330.00	30.3030	20.293	162.270	66.472	18.380	0.99699
340.00	29.4118	19.605	157.481	62.626	17.285	0.99691
350.00	28.5714	18.960	152.964	59.102	16.287	0.99683
360.00	27.7778	18.418	148.685	55.853	15.420	0.99674
370.00	27.0270	17.941	144.658	52.877	14.651	0.99665
380.00	26.3158	17.524	140.869	50.149	13.968	0.99655
390.00	25.6410	17.132	137.301	47.646	13.339	0.99645
400.00	25.0000	16.759	133.915	45.330	12.756	0.99635
410.00	24.3902	16.427	130.692	43.178	12.227	0.99624
420.00	23.8095	16.134	127.630	41.180	11.749	0.99613
430.00	23.2558	15.879	124.731	39.331	11.319	0.99602
440.00	22.7273	15.637	121.987	37.620	10.920	0.99590
450.00	22.2222	15.406	119.378	36.028	10.545	0.99578
460.00	21.7391	15.183	116.891	34.544	10.192	0.99567
470.00	21.2766	14.968	114.511	33.152	9.858	0.99555
480.00	20.8333	14.776	112.227	31.843	9.551	0.99543
490.00	20.4082	14.609	110.046	30.616	9.272	0.99530
500.00	20.0000	14.470	107.976	29.473	9.020	0.99517
510.00	19.6078	14.323	106.017	28.413	8.776	0.99504
520.00	19.2308	14.167	104.147	27.419	8.538	0.99492
530.00	18.8679	14.000	102.349	26.481	8.303	0.99480
540.00	18.5185	13.836	100.610	25.590	8.077	0.99468
550.00	18.1818	13.690	98.934	24.745	7.869	0.99456
560.00	17.8571	13.552	97.331	23.950	7.672	0.99444
570.00	17.5439	13.422	95.800	23.203	7.488	0.99432
580.00	17.2414	13.272	94.337	22.501	7.301	0.99421
590.00	16.9492	13.112	92.917	21.830	7.115	0.99410
600.00	16.6667	12.955	91.534	21.188	6.936	0.99399
610.00	16.3934	12.813	90.192	20.572	6.769	0.99388
620.00	16.1290	12.690	88.903	19.990	6.616	0.99377
630.00	15.8730	12.565	87.677	19.443	6.469	0.99366
640.00	15.6250	12.426	86.503	18.928	6.320	0.99356
650.00	15.3846	12.268	85.364	18.436	6.168	0.99347
660.00	15.1515	12.102	84.247	17.960	6.016	0.99338
670.00	14.9254	11.949	83.153	17.499	5.873	0.99329

WN	WL	N	K	DN	DK	R
680.00	14.7059	11.801	82.093	17.059	5.737	0.99321
690.00	14.4928	11.661	81.071	16.640	5.607	0.99312
700.00	14.2857	11.507	80.082	16.240	5.476	0.99304
710.00	14.0845	11.356	79.117	15.854	5.349	0.99296
720.00	13.8889	11.202	78.178	15.483	5.224	0.99289
730.00	13.6986	11.052	77.262	15.126	5.104	0.99282
740.00	13.5135	10.898	76.371	14.782	4.985	0.99275
750.00	13.3337	10.748	75.498	14.450	4.871	0.99268
760.00	13.157	10.603	74.650	14.130	4.761	0.99262
770.00	12.9870	10.455	73.829	13.824	4.654	0.99256
780.00	12.8205	10.305	73.028	13.530	4.547	0.99250
790.00	12.6582	10.152	72.246	13.245	4.442	0.99245
800.00	12.5000	9.995	71.482	12.970	4.338	0.99241
810.00	12.3457	9.834	70.732	12.703	4.235	0.99237
820.00	12.1951	9.669	69.990	12.442	4.132	0.99233
830.00	12.0482	9.514	69.257	12.187	4.035	0.99229
840.00	11.9048	9.363	68.539	11.939	3.940	0.99226
850.00	11.7647	9.217	67.838	11.699	3.850	0.99222
860.00	11.6279	9.068	67.151	11.467	3.760	0.99218
870.00	11.4943	8.922	66.474	11.240	3.673	0.99215
880.00	11.3636	8.780	65.810	11.020	3.589	0.99212
890.00	11.2360	8.642	65.157	10.805	3.508	0.99208
900.00	11.1111	8.507	64.517	10.597	3.429	0.99205
910.00	10.9890	8.376	63.891	10.395	3.354	0.99202
920.00	10.8696	8.243	63.278	10.199	3.279	0.99199
930.00	10.7527	8.113	62.675	10.009	3.206	0.99196
940.00	10.6383	7.980	62.080	9.822	3.134	0.99194
950.00	10.5263	7.856	61.494	9.640	3.066	0.99191
960.00	10.4167	7.729	60.918	9.463	2.998	0.99189
970.00	10.3093	7.610	60.349	9.290	2.933	0.99186
980.00	10.2041	7.489	59.791	9.121	2.870	0.99184
990.00	10.1010	7.375	59.238	8.955	2.809	0.99181
1000.00	10.0000	7.264	58.695	8.794	2.750	0.99178
1010.00	9.9010	7.160	58.161	8.637	2.694	0.99175
1020.00	9.8039	7.060	57.640	8.484	2.641	0.99172
1030.00	9.7087	6.957	57.129	8.337	2.588	0.99169
1040.00	9.6154	6.857	56.625	8.192	2.536	0.99166
1050.00	9.5238	6.758	56.127	8.050	2.486	0.99163
1060.00	9.4340	6.666	55.636	7.912	2.438	0.99160
1070.00	9.3458	6.577	55.155	7.778	2.392	0.99157
1080.00	9.2593	6.490	54.683	7.647	2.348	0.99153
1090.00	9.1743	6.405	54.220	7.519	2.304	0.99150
1100.00	9.0909	6.321	53.764	7.395	2.262	0.99147
1110.00	9.0090	6.240	53.316	7.273	2.222	0.99143
1120.00	8.9286	6.161	52.875	7.155	2.182	0.99140
1130.00	8.8496	6.083	52.442	7.040	2.143	0.99137
1140.00	8.7719	6.007	52.016	6.927	2.106	0.99133
1150.00	8.6957	5.933	51.597	6.817	2.070	0.99130
1160.00	8.6207	5.860	51.184	6.710	2.034	0.99127
1170.00	8.5470	5.789	50.778	6.605	2.000	0.99123

WN	WL	N	K	DN	DK	R
1180.00	8.4746	5.720	50.379	6.503	1.966	0.99120
1190.00	8.4034	5.652	49.987	6.403	1.934	0.99117
1200.00	8.3333	5.585	49.600	6.305	1.902	0.99113
1210.00	8.2645	5.520	49.220	6.210	1.871	0.99110
1220.00	8.1967	5.457	48.847	6.118	1.842	0.99107
1230.00	8.1301	5.392	48.481	6.027	1.812	0.99104
1240.00	8.0645	5.327	48.118	5.938	1.782	0.99101
1250.00	8.0000	5.264	47.758	5.851	1.754	0.99098
1260.00	7.9365	5.205	47.404	5.765	1.727	0.99095
1270.00	7.8740	5.147	47.056	5.682	1.700	0.99092
1280.00	7.8125	5.091	46.714	5.601	1.675	0.99088
1290.00	7.7519	5.036	46.379	5.521	1.650	0.99085
1300.00	7.6923	4.980	46.051	5.444	1.625	0.99082
1310.00	7.6336	4.922	45.728	5.369	1.600	0.99080
1320.00	7.5758	4.861	45.406	5.295	1.575	0.99078
1330.00	7.5188	4.804	45.087	5.221	1.551	0.99076
1340.00	7.4627	4.748	44.770	5.149	1.527	0.99074
1350.00	7.4074	4.695	44.455	5.078	1.505	0.99071
1360.00	7.3529	4.642	44.152	5.009	1.482	0.99069
1370.00	7.2993	4.591	43.849	4.942	1.461	0.99066
1380.00	7.2464	4.540	43.550	4.875	1.440	0.99064
1390.00	7.1942	4.491	43.255	4.810	1.419	0.99061
1400.00	7.1429	4.442	42.966	4.747	1.399	0.99059
1410.00	7.0922	4.393	42.680	4.684	1.379	0.99057
1420.00	7.0423	4.342	42.398	4.623	1.359	0.99055
1430.00	6.9930	4.292	42.116	4.563	1.339	0.99053
1440.00	6.9444	4.245	41.837	4.503	1.321	0.99051
1450.00	6.8966	4.198	41.561	4.444	1.302	0.99049
1460.00	6.8493	4.155	41.289	4.387	1.285	0.99046
1470.00	6.8027	4.111	41.022	4.331	1.267	0.99044
1480.00	6.7568	4.068	40.758	4.276	1.250	0.99042
1490.00	6.7114	4.022	40.496	4.222	1.233	0.99040
1500.00	6.6667	3.979	40.234	4.168	1.216	0.99038
1510.00	6.6225	3.939	39.976	4.115	1.200	0.99035
1520.00	6.5789	3.903	39.721	4.064	1.185	0.99032
1530.00	6.5359	3.865	39.472	4.013	1.170	0.99029
1540.00	6.4935	3.827	39.225	3.964	1.155	0.99026
1550.00	6.4516	3.788	38.981	3.915	1.140	0.99024
1560.00	6.4103	3.752	38.738	3.867	1.126	0.99021
1570.00	6.3694	3.715	38.496	3.819	1.112	0.99018
1580.00	6.3291	3.684	38.257	3.772	1.099	0.99014
1590.00	6.2893	3.653	38.022	3.727	1.086	0.99011
1600.00	6.2500	3.623	37.791	3.682	1.074	0.99007
1610.00	6.2112	3.591	37.563	3.638	1.061	0.99003
1620.00	6.1729	3.562	37.337	3.595	1.049	0.98999
1630.00	6.1350	3.535	37.113	3.552	1.038	0.98995
1640.00	6.0976	3.509	36.894	3.511	1.027	0.98991
1650.00	6.0606	3.481	36.679	3.471	1.016	0.98987
1660.00	6.0241	3.452	36.464	3.431	1.005	0.98983
1670.00	5.9880	3.425	36.251	3.391	0.994	0.98979



WN	WL	N	K	DN	DK	R
1680.00	5.9524	3.399	36.039	3.352	0.983	0.98975
1690.00	5.9172	3.377	35.830	3.313	0.973	0.98970
1700.00	5.8824	3.354	35.625	3.276	0.964	0.98965
1710.00	5.8480	3.332	35.422	3.239	0.954	0.98960
1720.00	5.8140	3.311	35.223	3.203	0.945	0.98955
1730.00	5.7803	3.290	35.025	3.168	0.936	0.98950
1740.00	5.7471	3.269	34.830	3.133	0.927	0.98945
1750.00	5.7143	3.249	34.636	3.099	0.919	0.98939
1760.00	5.6818	3.232	34.446	3.065	0.911	0.98933
1770.00	5.6497	3.216	34.260	3.032	0.903	0.98927
1780.00	5.6180	3.199	34.077	3.001	0.895	0.98922
1790.00	5.5866	3.179	33.896	2.969	0.887	0.98917
1800.00	5.5556	3.162	33.717	2.938	0.879	0.98911
1810.00	5.5249	3.145	33.540	2.908	0.872	0.98906
1820.00	5.4945	3.128	33.366	2.878	0.864	0.98900
1830.00	5.4645	3.111	33.195	2.849	0.857	0.98895
1840.00	5.4348	3.093	33.025	2.820	0.850	0.98890
1850.00	5.4054	3.075	32.856	2.792	0.842	0.98885
1860.00	5.3763	3.058	32.690	2.764	0.835	0.98880
1870.00	5.3476	3.041	32.526	2.737	0.828	0.98875
1880.00	5.3191	3.024	32.364	2.710	0.821	0.98870
1890.00	5.2910	3.007	32.203	2.683	0.814	0.98865
1900.00	5.2632	2.991	32.045	2.657	0.808	0.98860
1910.00	5.2356	2.975	31.889	2.632	0.801	0.98855
1920.00	5.2083	2.959	31.735	2.607	0.795	0.98850
1930.00	5.1813	2.943	31.584	2.582	0.788	0.98846
1940.00	5.1546	2.925	31.435	2.558	0.782	0.98842
1950.00	5.1282	2.905	31.286	2.534	0.775	0.98838
1960.00	5.1020	2.888	31.137	2.510	0.769	0.98834
1970.00	5.0761	2.870	30.991	2.487	0.762	0.98831
1980.00	5.0505	2.853	30.846	2.464	0.756	0.98827
1990.00	5.0251	2.834	30.703	2.442	0.750	0.98823
2000.00	5.0000	2.817	30.560	2.419	0.743	0.98819
2010.00	4.9751	2.801	30.419	2.397	0.737	0.98816
2020.00	4.9505	2.785	30.282	2.376	0.732	0.98812
2030.00	4.9261	2.766	30.146	2.355	0.726	0.98809
2040.00	4.9020	2.748	30.010	2.334	0.720	0.98806
2050.00	4.8780	2.728	29.876	2.313	0.713	0.98804
2060.00	4.8544	2.710	29.742	2.293	0.707	0.98801
2070.00	4.8309	2.691	29.609	2.273	0.701	0.98799
2080.00	4.8077	2.673	29.477	2.253	0.696	0.98796
2090.00	4.7847	2.654	29.347	2.233	0.690	0.98794
2100.00	4.7619	2.636	29.218	2.214	0.684	0.98792
2110.00	4.7393	2.616	29.091	2.195	0.678	0.98790
2120.00	4.7170	2.597	28.963	2.176	0.672	0.98788
2130.00	4.6948	2.579	28.836	2.157	0.667	0.98786
2140.00	4.6729	2.561	28.710	2.138	0.661	0.98784
2150.00	4.6512	2.544	28.587	2.120	0.656	0.98782
2160.00	4.6296	2.524	28.465	2.102	0.650	0.98781
2170.00	4.6083	2.505	28.343	2.084	0.645	0.98779

WN	WL	N	K	DN	DK	R
2180.00	4.5872	2.485	28.221	2.067	0.639	0.98778
2190.00	4.5662	2.468	28.101	2.049	0.634	0.98777
2200.00	4.5455	2.449	27.982	2.032	0.629	0.98776
2210.00	4.5249	2.429	27.863	2.015	0.623	0.98775
2220.00	4.5045	2.409	27.744	1.998	0.618	0.98774
2230.00	4.4843	2.391	27.626	1.981	0.613	0.98773
2240.00	4.4643	2.374	27.509	1.965	0.608	0.98772
2250.00	4.4444	2.356	27.393	1.948	0.603	0.98771
2260.00	4.4248	2.338	27.278	1.932	0.598	0.98769
2270.00	4.4053	2.321	27.163	1.916	0.593	0.98768
2280.00	4.3860	2.304	27.050	1.900	0.588	0.98767
2290.00	4.3668	2.287	26.938	1.885	0.583	0.98766
2300.00	4.3478	2.270	26.828	1.870	0.579	0.98765
2310.00	4.3290	2.251	26.717	1.854	0.574	0.98765
2320.00	4.3103	2.233	26.605	1.839	0.569	0.98764
2330.00	4.2918	2.216	26.494	1.824	0.564	0.98763
2340.00	4.2735	2.201	26.384	1.809	0.560	0.98762
2350.00	4.2553	2.186	26.275	1.794	0.556	0.98760
2360.00	4.2373	2.171	26.168	1.780	0.551	0.98758
2370.00	4.2194	2.156	26.061	1.765	0.547	0.98757
2380.00	4.2017	2.140	25.957	1.751	0.543	0.98756
2390.00	4.1841	2.124	25.852	1.737	0.539	0.98755
2400.00	4.1667	2.108	25.747	1.723	0.534	0.98754
2410.00	4.1494	2.092	25.641	1.709	0.530	0.98753
2420.00	4.1322	2.079	25.537	1.696	0.526	0.98751
2430.00	4.1152	2.066	25.434	1.682	0.522	0.98749
2440.00	4.0984	2.053	25.334	1.669	0.519	0.98747
2450.00	4.0816	2.039	25.234	1.656	0.515	0.98746
2460.00	4.0650	2.025	25.134	1.643	0.511	0.98744
2470.00	4.0486	2.010	25.034	1.630	0.507	0.98743
2480.00	4.0323	1.997	24.934	1.617	0.503	0.98742
2490.00	4.0161	1.984	24.836	1.605	0.500	0.98740
2500.00	4.0000	1.971	24.738	1.592	0.496	0.98738
2510.00	3.9841	1.959	24.640	1.580	0.493	0.98736
2520.00	3.9683	1.947	24.543	1.567	0.489	0.98734
2530.00	3.9526	1.936	24.447	1.555	0.486	0.98731
2540.00	3.9370	1.924	24.353	1.543	0.483	0.98729
2550.00	3.9216	1.913	24.259	1.532	0.480	0.98726
2560.00	3.9063	1.902	24.166	1.520	0.476	0.98724
2570.00	3.8911	1.892	24.073	1.509	0.473	0.98721
2580.00	3.8760	1.881	23.981	1.497	0.470	0.98719
2590.00	3.8610	1.870	23.890	1.486	0.467	0.98716
2600.00	3.8462	1.859	23.800	1.475	0.464	0.98714
2610.00	3.8314	1.849	23.710	1.464	0.461	0.98711
2620.00	3.8168	1.839	23.621	1.453	0.458	0.98709
2630.00	3.8023	1.829	23.532	1.442	0.455	0.98706
2640.00	3.7879	1.819	23.444	1.432	0.452	0.98703
2650.00	3.7736	1.810	23.357	1.421	0.450	0.98700
2660.00	3.7594	1.802	23.270	1.411	0.447	0.98697
2670.00	3.7453	1.792	23.185	1.401	0.444	0.98694

WN	WL	N	K	DN	DK	R
2680.00	3.7313	1.783	23.101	1.391	0.441	0.98691
2690.00	3.7175	1.773	23.017	1.381	0.439	0.98689
2700.00	3.7037	1.764	22.933	1.371	0.436	0.98686
2710.00	3.6900	1.754	22.850	1.361	0.433	0.98684
2720.00	3.6765	1.745	22.767	1.351	0.431	0.98681
2730.00	3.6630	1.736	22.684	1.341	0.428	0.98678
2740.00	3.6496	1.728	22.602	1.332	0.426	0.98675
2750.00	3.6364	1.720	22.521	1.322	0.423	0.98672
2760.00	3.6232	1.712	22.441	1.313	0.421	0.98668
2770.00	3.6101	1.704	22.361	1.304	0.418	0.98665
2780.00	3.5971	1.696	22.282	1.295	0.416	0.98662
2790.00	3.5842	1.688	22.204	1.286	0.414	0.98659
2800.00	3.5714	1.680	22.127	1.277	0.411	0.98656
2810.00	3.5587	1.671	22.049	1.268	0.409	0.98653
2820.00	3.5461	1.664	21.972	1.259	0.407	0.98650
2830.00	3.5336	1.656	21.895	1.251	0.404	0.98647
2840.00	3.5211	1.649	21.820	1.242	0.402	0.98643
2850.00	3.5088	1.642	21.744	1.234	0.400	0.98640
2860.00	3.4965	1.635	21.670	1.226	0.398	0.98637
2870.00	3.4843	1.627	21.597	1.217	0.396	0.98634
2880.00	3.4722	1.619	21.523	1.209	0.394	0.98631
2890.00	3.4602	1.611	21.450	1.201	0.391	0.98628
2900.00	3.4483	1.604	21.377	1.193	0.389	0.98625
2910.00	3.4364	1.597	21.304	1.185	0.387	0.98622
2920.00	3.4247	1.591	21.232	1.177	0.385	0.98618
2930.00	3.4130	1.584	21.161	1.169	0.383	0.98615
2940.00	3.4014	1.577	21.091	1.162	0.381	0.98612
2950.00	3.3898	1.570	21.020	1.154	0.379	0.98608
2960.00	3.3784	1.564	20.951	1.147	0.377	0.98605
2970.00	3.3670	1.557	20.881	1.139	0.375	0.98602
2980.00	3.3557	1.551	20.813	1.132	0.373	0.98598
2990.00	3.3445	1.544	20.744	1.124	0.371	0.98595
3000.00	3.3333	1.538	20.676	1.117	0.370	0.98592
3010.00	3.3223	1.531	20.609	1.110	0.368	0.98588
3020.00	3.3113	1.526	20.541	1.103	0.366	0.98584
3030.00	3.3003	1.520	20.475	1.096	0.364	0.98581
3040.00	3.2895	1.514	20.410	1.089	0.362	0.98577
3050.00	3.2787	1.508	20.345	1.082	0.361	0.98574
3060.00	3.2680	1.501	20.280	1.075	0.359	0.98571
3070.00	3.2573	1.494	20.214	1.068	0.357	0.98568
3080.00	3.2468	1.489	20.149	1.062	0.355	0.98564
3090.00	3.2362	1.483	20.085	1.055	0.353	0.98561
3100.00	3.2258	1.478	20.022	1.049	0.352	0.98557
3110.00	3.2154	1.472	19.959	1.042	0.350	0.98553
3120.00	3.2051	1.467	19.896	1.036	0.348	0.98549
3130.00	3.1949	1.462	19.834	1.029	0.347	0.98546
3140.00	3.1847	1.457	19.772	1.023	0.345	0.98542
3150.00	3.1746	1.451	19.711	1.017	0.344	0.98538
3160.00	3.1646	1.446	19.650	1.011	0.342	0.98534
3170.00	3.1546	1.441	19.590	1.004	0.341	0.98531

WN	WL	N	K	DN	DK	R
3180.00	3.1447	1.436	19.530	0.998	0.339	0.98527
3190.00	3.1348	1.430	19.471	0.992	0.337	0.98523
3200.00	3.1250	1.425	19.412	0.987	0.336	0.98520
3210.00	3.1153	1.420	19.353	0.981	0.334	0.98517
3220.00	3.1056	1.414	19.294	0.975	0.333	0.98513
3230.00	3.0960	1.409	19.236	0.969	0.331	0.98509
3240.00	3.0864	1.405	19.178	0.963	0.330	0.98506
3250.00	3.0769	1.400	19.121	0.958	0.328	0.98502
3260.00	3.0675	1.395	19.064	0.952	0.327	0.98498
3270.00	3.0581	1.390	19.008	0.947	0.326	0.98495
3280.00	3.0488	1.385	18.952	0.941	0.324	0.98492
3290.00	3.0395	1.380	18.896	0.936	0.323	0.98488
3300.00	3.0303	1.375	18.841	0.930	0.321	0.98485
3310.00	3.0211	1.370	18.786	0.925	0.320	0.98482
3320.00	3.0120	1.365	18.731	0.920	0.318	0.98478
3330.00	3.0030	1.360	18.677	0.914	0.317	0.98475
3340.00	2.9940	1.355	18.623	0.909	0.316	0.98472
3350.00	2.9851	1.350	18.570	0.904	0.314	0.98469
3360.00	2.9762	1.344	18.517	0.899	0.313	0.98466
3370.00	2.9674	1.339	18.464	0.894	0.311	0.98463
3380.00	2.9586	1.334	18.411	0.889	0.310	0.98460
3390.00	2.9499	1.330	18.359	0.884	0.309	0.98457
3400.00	2.9412	1.325	18.307	0.879	0.308	0.98454
3410.00	2.9326	1.320	18.256	0.874	0.306	0.98451
3420.00	2.9240	1.314	18.204	0.869	0.305	0.98449
3430.00	2.9155	1.309	18.153	0.865	0.304	0.98446
3440.00	2.9070	1.304	18.103	0.860	0.302	0.98444
3450.00	2.8986	1.299	18.053	0.855	0.301	0.98442
3460.00	2.8902	1.293	18.003	0.850	0.300	0.98440
3470.00	2.8818	1.287	17.953	0.846	0.298	0.98438
3480.00	2.8736	1.282	17.903	0.841	0.297	0.98436
3490.00	2.8653	1.276	17.853	0.837	0.296	0.98434
3500.00	2.8571	1.271	17.804	0.832	0.294	0.98432
3510.00	2.8490	1.266	17.755	0.828	0.293	0.98430
3520.00	2.8409	1.260	17.707	0.823	0.292	0.98428
3530.00	2.8329	1.254	17.658	0.819	0.290	0.98427
3540.00	2.8249	1.249	17.610	0.814	0.289	0.98425
3550.00	2.8169	1.243	17.562	0.810	0.288	0.98423
3560.00	2.8090	1.238	17.514	0.805	0.287	0.98422
3570.00	2.8011	1.232	17.467	0.801	0.285	0.98421
3580.00	2.7933	1.226	17.420	0.797	0.284	0.98419
3590.00	2.7855	1.221	17.372	0.793	0.283	0.98418
3600.00	2.7778	1.215	17.325	0.788	0.282	0.98417
3610.00	2.7701	1.210	17.278	0.784	0.280	0.98416
3620.00	2.7624	1.204	17.231	0.780	0.279	0.98414
3630.00	2.7548	1.198	17.185	0.776	0.278	0.98413
3640.00	2.7473	1.193	17.138	0.772	0.277	0.98412
3650.00	2.7397	1.188	17.092	0.767	0.275	0.98410
3660.00	2.7322	1.183	17.046	0.763	0.274	0.98408
3670.00	2.7248	1.178	17.001	0.759	0.273	0.98407

WN	WL	N	K	DN	DK	R
3680.00	2.7174	1.172	16.955	0.755	0.272	0.98406
3690.00	2.7100	1.167	16.910	0.751	0.271	0.98404
3700.00	2.7027	1.161	16.865	0.747	0.269	0.98403
3710.00	2.6954	1.156	16.819	0.743	0.268	0.98402
3720.00	2.6882	1.151	16.775	0.740	0.267	0.98400
3730.00	2.6810	1.147	16.730	0.736	0.266	0.98398
3740.00	2.6738	1.142	16.686	0.732	0.265	0.98397
3750.00	2.6667	1.137	16.642	0.728	0.264	0.98395
3760.00	2.6596	1.132	16.598	0.724	0.263	0.98393
3770.00	2.6525	1.127	16.554	0.720	0.262	0.98392
3780.00	2.6455	1.122	16.510	0.717	0.261	0.98390
3790.00	2.6385	1.118	16.467	0.713	0.260	0.98388
3800.00	2.6316	1.113	16.424	0.709	0.258	0.98386
3810.00	2.6247	1.109	16.381	0.706	0.257	0.98384
3820.00	2.6178	1.105	16.338	0.702	0.256	0.98382
3830.00	2.6110	1.100	16.296	0.699	0.255	0.98380
3840.00	2.6042	1.096	16.254	0.695	0.254	0.98378
3850.00	2.5974	1.091	16.212	0.691	0.253	0.98377
3860.00	2.5907	1.087	16.170	0.688	0.252	0.98375
3870.00	2.5840	1.082	16.129	0.684	0.251	0.98373
3880.00	2.5773	1.078	16.087	0.681	0.250	0.98372
3890.00	2.5707	1.074	16.046	0.678	0.249	0.98370
3900.00	2.5641	1.069	16.005	0.674	0.248	0.98368
3910.00	2.5575	1.065	15.964	0.671	0.247	0.98367
3920.00	2.5510	1.061	15.924	0.667	0.246	0.98365
3930.00	2.5445	1.056	15.884	0.664	0.245	0.98363
3940.00	2.5381	1.052	15.843	0.661	0.244	0.98362
3950.00	2.5316	1.048	15.804	0.657	0.244	0.98361
3960.00	2.5253	1.043	15.764	0.654	0.243	0.98360
3970.00	2.5189	1.038	15.724	0.651	0.242	0.98359
3980.00	2.5126	1.033	15.684	0.648	0.241	0.98358
3990.00	2.5063	1.029	15.644	0.644	0.240	0.98357
4000.00	2.5000	1.024	15.604	0.641	0.239	0.98356
4016.06	2.4900	1.018	15.538	0.636	0.237	0.98352
4032.26	2.4800	1.011	15.475	0.631	0.236	0.98350
4048.58	2.4700	1.008	15.410	0.626	0.234	0.98342
4065.04	2.4600	1.003	15.347	0.621	0.233	0.98337
4081.63	2.4500	0.998	15.285	0.616	0.232	0.98331
4098.36	2.4400	0.993	15.222	0.611	0.230	0.98326
4115.23	2.4300	0.988	15.160	0.606	0.229	0.98320
4132.23	2.4200	0.983	15.097	0.601	0.228	0.98316
4149.38	2.4100	0.975	15.035	0.596	0.226	0.98314
4166.67	2.4000	0.971	14.972	0.591	0.225	0.98308
4184.10	2.3900	0.965	14.910	0.586	0.224	0.98305
4201.68	2.3800	0.959	14.848	0.581	0.222	0.98300
4219.41	2.3700	0.954	14.786	0.577	0.221	0.98295
4237.29	2.3600	0.949	14.722	0.572	0.220	0.98291
4255.32	2.3500	0.941	14.660	0.567	0.218	0.98290
4273.50	2.3400	0.936	14.596	0.562	0.217	0.98285
4291.85	2.3300	0.930	14.534	0.557	0.215	0.98280

WN	WL	N	K	DN	DK	R
4310.35	2.3200	0.925	14.470	0.553	0.214	0.98275
4329.00	2.3100	0.919	14.407	0.548	0.213	0.98270
4347.83	2.3000	0.913	14.343	0.543	0.211	0.98267
4366.81	2.2900	0.908	14.280	0.538	0.210	0.98261
4385.96	2.2800	0.902	14.216	0.534	0.209	0.98258
4405.29	2.2700	0.895	14.154	0.529	0.207	0.98255
4424.76	2.2600	0.890	14.089	0.524	0.206	0.98249
4444.44	2.2500	0.885	14.026	0.520	0.205	0.98244
4464.29	2.2400	0.881	13.962	0.515	0.203	0.98237
4484.30	2.2300	0.874	13.900	0.511	0.202	0.98234
4504.50	2.2200	0.868	13.837	0.506	0.201	0.98230
4524.89	2.2100	0.863	13.772	0.501	0.199	0.98224
4545.45	2.2000	0.857	13.708	0.497	0.198	0.98219
4566.21	2.1900	0.854	13.644	0.492	0.197	0.98211
4587.16	2.1800	0.848	13.580	0.488	0.196	0.98205
4608.29	2.1700	0.843	13.518	0.483	0.194	0.98200
4629.63	2.1600	0.837	13.454	0.479	0.193	0.98195
4651.16	2.1500	0.832	13.389	0.474	0.192	0.98188
4672.90	2.1400	0.828	13.325	0.470	0.191	0.98182
4694.84	2.1300	0.823	13.262	0.466	0.189	0.98175
4716.98	2.1200	0.817	13.198	0.461	0.188	0.98170
4739.34	2.1100	0.811	13.132	0.457	0.187	0.98165
4761.90	2.1000	0.806	13.067	0.452	0.186	0.98158
4784.69	2.0900	0.802	13.004	0.448	0.184	0.98150
4807.69	2.0800	0.798	12.938	0.444	0.183	0.98141
4830.92	2.0700	0.793	12.874	0.439	0.182	0.98135
4854.37	2.0600	0.789	12.810	0.435	0.181	0.98125
4878.05	2.0500	0.785	12.745	0.431	0.180	0.98117
4901.96	2.0400	0.780	12.681	0.427	0.178	0.98110
4926.11	2.0300	0.775	12.615	0.422	0.177	0.98102
4950.50	2.0200	0.770	12.550	0.418	0.176	0.98094
4975.12	2.0100	0.766	12.484	0.414	0.175	0.98086
5000.00	2.0000	0.762	12.419	0.410	0.174	0.98076
5025.13	1.9900	0.759	12.352	0.405	0.172	0.98063
5050.50	1.9800	0.756	12.286	0.401	0.171	0.98049
5076.14	1.9700	0.754	12.221	0.397	0.170	0.98033
5102.04	1.9600	0.752	12.156	0.393	0.169	0.98018
5128.20	1.9500	0.750	12.091	0.389	0.168	0.98003
5154.64	1.9400	0.748	12.027	0.385	0.167	0.97988
5181.35	1.9300	0.745	11.962	0.381	0.166	0.97973
5208.33	1.9200	0.742	11.897	0.377	0.165	0.97960
5235.60	1.9100	0.741	11.831	0.373	0.164	0.97941
5263.16	1.9000	0.741	11.766	0.369	0.163	0.97919
5291.00	1.8900	0.742	11.703	0.365	0.162	0.97894
5319.15	1.8800	0.742	11.642	0.362	0.162	0.97872
5347.59	1.8700	0.739	11.583	0.358	0.161	0.97860
5376.34	1.8600	0.733	11.520	0.354	0.159	0.97854
5405.40	1.8500	0.727	11.456	0.350	0.158	0.97848
5434.78	1.8400	0.722	11.389	0.346	0.157	0.97837
5464.48	1.8300	0.721	11.321	0.342	0.156	0.97815

WN	WL	N	K	DN	DK	R
5494.50	1.8200	0.722	11.255	0.339	0.155	0.97786
5524.86	1.8100	0.724	11.191	0.335	0.154	0.97757
5555.56	1.8000	0.723	11.130	0.331	0.153	0.97734
5586.59	1.7900	0.722	11.067	0.328	0.153	0.97711
5617.98	1.7800	0.721	11.005	0.324	0.152	0.97691
5649.72	1.7700	0.720	10.942	0.321	0.151	0.97669
5681.82	1.7600	0.719	10.879	0.317	0.150	0.97645
5714.29	1.7500	0.718	10.816	0.314	0.149	0.97621
5747.13	1.7400	0.718	10.754	0.310	0.148	0.97593
5780.35	1.7300	0.718	10.694	0.307	0.147	0.97566
5813.95	1.7200	0.717	10.634	0.304	0.146	0.97543
5847.95	1.7100	0.716	10.574	0.301	0.145	0.97522
5882.35	1.7000	0.713	10.514	0.297	0.144	0.97503
5917.16	1.6900	0.710	10.454	0.294	0.143	0.97485
5952.38	1.6800	0.707	10.394	0.291	0.142	0.97467
5988.02	1.6700	0.703	10.334	0.288	0.141	0.97452
6024.10	1.6600	0.699	10.274	0.284	0.140	0.97438
6060.61	1.6500	0.695	10.215	0.281	0.139	0.97425
6097.56	1.6400	0.689	10.154	0.278	0.138	0.97416
6134.97	1.6300	0.681	10.093	0.275	0.137	0.97414
6172.84	1.6200	0.675	10.030	0.271	0.136	0.97406
6211.18	1.6100	0.669	9.966	0.268	0.135	0.97397
6250.00	1.6000	0.664	9.902	0.265	0.134	0.97382
6289.31	1.5900	0.659	9.839	0.261	0.133	0.97369
6329.11	1.5800	0.654	9.775	0.258	0.131	0.97357
6369.43	1.5700	0.648	9.710	0.255	0.130	0.97343
6410.26	1.5600	0.644	9.644	0.252	0.129	0.97324
6451.61	1.5500	0.642	9.579	0.248	0.128	0.97299
6493.51	1.5400	0.641	9.515	0.245	0.127	0.97268
6535.95	1.5300	0.639	9.452	0.242	0.126	0.97240
6578.95	1.5200	0.636	9.392	0.239	0.125	0.97221
6622.52	1.5100	0.630	9.330	0.236	0.124	0.97210
6666.67	1.5000	0.624	9.267	0.233	0.123	0.97199
6711.41	1.4900	0.618	9.202	0.230	0.122	0.97186
6756.76	1.4800	0.613	9.137	0.227	0.121	0.97169
6802.72	1.4700	0.608	9.071	0.224	0.120	0.97152
6849.31	1.4600	0.604	9.004	0.220	0.119	0.97129
6896.55	1.4500	0.602	8.938	0.217	0.118	0.97098
6944.44	1.4400	0.601	8.872	0.214	0.117	0.97062
6993.01	1.4300	0.600	8.807	0.211	0.116	0.97024
7042.25	1.4200	0.599	8.743	0.209	0.115	0.96988
7092.20	1.4100	0.597	8.680	0.206	0.114	0.96954
7142.86	1.4000	0.595	8.617	0.203	0.113	0.96920
7194.25	1.3900	0.593	8.553	0.200	0.112	0.96885
7246.38	1.3800	0.591	8.491	0.197	0.112	0.96852
7299.27	1.3700	0.589	8.429	0.195	0.111	0.96820
7352.94	1.3600	0.585	8.367	0.192	0.110	0.96794
7407.41	1.3500	0.581	8.305	0.189	0.109	0.96769
7462.69	1.3400	0.577	8.242	0.186	0.108	0.96746
7518.80	1.3300	0.572	8.179	0.184	0.107	0.96721

WN	WL	N	K	DN	DK	R
7575.76	1.3200	0.568	8.116	0.181	0.106	0.96696
7633.59	1.3100	0.563	8.052	0.178	0.105	0.96674
7692.31	1.3000	0.558	7.989	0.176	0.104	0.96653
7751.94	1.2900	0.553	7.924	0.173	0.103	0.96629
7812.50	1.2800	0.548	7.859	0.170	0.102	0.96604
7874.02	1.2700	0.543	7.795	0.168	0.101	0.96583
7936.51	1.2600	0.537	7.730	0.165	0.100	0.96565
8000.00	1.2500	0.532	7.662	0.162	0.099	0.96540
8064.52	1.2400	0.528	7.594	0.159	0.098	0.96500
8130.08	1.2300	0.528	7.528	0.157	0.097	0.96445
8196.72	1.2200	0.526	7.464	0.154	0.096	0.96396
8264.46	1.2100	0.522	7.402	0.152	0.095	0.96367
8333.33	1.2000	0.515	7.337	0.149	0.094	0.96354
8403.36	1.1900	0.509	7.269	0.147	0.093	0.96331
8474.58	1.1800	0.505	7.201	0.144	0.092	0.96290
8547.01	1.1700	0.503	7.133	0.142	0.091	0.96235
8620.69	1.1600	0.502	7.067	0.139	0.090	0.96180
8695.65	1.1500	0.499	7.001	0.137	0.089	0.96130
8771.93	1.1400	0.497	6.935	0.134	0.088	0.96073
8849.56	1.1300	0.496	6.870	0.132	0.087	0.96016
8928.57	1.1200	0.492	6.807	0.130	0.086	0.95972
9009.01	1.1100	0.487	6.743	0.128	0.085	0.95943
9090.91	1.1000	0.480	6.676	0.125	0.084	0.95920
9174.31	1.0900	0.474	6.608	0.123	0.083	0.95888
9259.26	1.0800	0.470	6.538	0.120	0.082	0.95838
9345.79	1.0700	0.468	6.469	0.118	0.081	0.95776
9433.96	1.0600	0.466	6.400	0.116	0.080	0.95708
9523.81	1.0500	0.464	6.331	0.113	0.079	0.95636
9615.38	1.0400	0.462	6.263	0.111	0.079	0.95558
9708.74	1.0300	0.462	6.195	0.109	0.078	0.95464
9803.92	1.0200	0.463	6.128	0.107	0.077	0.95365
9900.99	1.0100	0.462	6.064	0.105	0.076	0.95279
10000.00	1.0000	0.459	6.000	0.103	0.075	0.95216
10101.01	0.9900	0.454	5.934	0.101	0.074	0.95171
10204.08	0.9800	0.448	5.865	0.099	0.073	0.95119
10309.28	0.9700	0.445	5.795	0.097	0.072	0.95044
10416.67	0.9600	0.444	5.725	0.094	0.071	0.94940
10526.32	0.9500	0.443	5.656	0.092	0.071	0.94829
10638.30	0.9400	0.443	5.589	0.090	0.070	0.94721
10752.69	0.9300	0.441	5.522	0.089	0.069	0.94620
10869.56	0.9200	0.439	5.455	0.087	0.068	0.94515
10989.01	0.9100	0.437	5.387	0.085	0.067	0.94415
11111.11	0.9000	0.434	5.321	0.083	0.066	0.94319
11235.95	0.8900	0.431	5.253	0.081	0.065	0.94225
11363.64	0.8800	0.427	5.184	0.079	0.064	0.94125
11494.25	0.8700	0.425	5.116	0.077	0.064	0.94015
11627.91	0.8600	0.421	5.049	0.075	0.063	0.93913
11764.71	0.8500	0.416	4.982	0.074	0.062	0.93831
11904.76	0.8400	0.410	4.913	0.072	0.061	0.93766
12048.19	0.8300	0.403	4.843	0.070	0.060	0.93697



WN	WL	N	K	DN	DK	R
12195.12	0.8200	0.397	4.772	0.068	0.059	0.93621
12345.68	0.8100	0.390	4.699	0.066	0.058	0.93544
12500.00	0.8000	0.383	4.626	0.064	0.057	0.93466
12658.23	0.7900	0.377	4.550	0.062	0.056	0.93375
12820.51	0.7800	0.371	4.474	0.061	0.055	0.93264
12987.01	0.7700	0.367	4.396	0.059	0.054	0.93128
13157.89	0.7600	0.363	4.318	0.057	0.053	0.92966
13333.33	0.7500	0.360	4.240	0.055	0.052	0.92783
13513.51	0.7400	0.357	4.162	0.053	0.051	0.92593
13698.63	0.7300	0.354	4.084	0.052	0.050	0.92404
13888.89	0.7200	0.350	4.004	0.050	0.049	0.92206
14084.51	0.7100	0.347	3.923	0.048	0.048	0.91993
14285.71	0.7000	0.343	3.841	0.047	0.047	0.91765
14492.75	0.6900	0.339	3.757	0.045	0.046	0.91531
14705.88	0.6800	0.335	3.671	0.043	0.045	0.91273
14925.37	0.6700	0.332	3.583	0.042	0.044	0.90971
15151.51	0.6600	0.329	3.492	0.040	0.043	0.90629
15384.62	0.6500	0.326	3.400	0.038	0.041	0.90275
15625.00	0.6400	0.321	3.302	0.036	0.040	0.89912
15873.02	0.6300	0.317	3.197	0.035	0.039	0.89479
16129.03	0.6200	0.314	3.083	0.033	0.038	0.88884
16393.44	0.6100	0.317	2.957	0.031	0.036	0.87968
16666.67	0.6000	0.334	2.815	0.029	0.035	0.86342
16949.15	0.5900	0.376	2.661	0.027	0.034	0.83367
17241.38	0.5800	0.454	2.510	0.027	0.032	0.78580
17543.86	0.5700	0.565	2.382	0.027	0.031	0.72353
17857.14	0.5600	0.696	2.293	0.027	0.031	0.65979
18181.82	0.5500	0.825	2.248	0.028	0.030	0.60877
18518.52	0.5400	0.930	2.238	0.029	0.030	0.57634
18867.92	0.5300	1.002	2.242	0.029	0.030	0.55871
19230.77	0.5200	1.046	2.244	0.030	0.030	0.54855
19607.84	0.5100	1.073	2.235	0.030	0.030	0.54036
20000.00	0.5000	1.093	2.215	0.030	0.029	0.53166
20408.16	0.4900	1.110	2.186	0.029	0.029	0.52164
20833.33	0.4800	1.126	2.154	0.029	0.028	0.51069
21276.60	0.4700	1.142	2.119	0.028	0.028	0.49946
21739.13	0.4600	1.155	2.083	0.028	0.027	0.48808
22222.22	0.4500	1.167	2.042	0.027	0.026	0.47594
22727.27	0.4400	1.180	1.998	0.027	0.026	0.46268
23255.81	0.4300	1.196	1.952	0.026	0.025	0.44857
23809.52	0.4200	1.212	1.907	0.026	0.024	0.43415
24390.24	0.4100	1.229	1.862	0.025	0.023	0.41976
25000.00	0.4000	1.247	1.818	0.024	0.022	0.40556
25641.03	0.3900	1.263	1.773	0.024	0.021	0.39149
26315.79	0.3800	1.279	1.728	0.023	0.020	0.37728
27027.03	0.3700	1.297	1.683	0.022	0.019	0.36276
27777.78	0.3600	1.316	1.637	0.022	0.019	0.34811
28571.43	0.3500	1.338	1.593	0.021	0.018	0.33392
29411.76	0.3400	1.359	1.552	0.020	0.017	0.32070
30303.03	0.3300	1.379	1.511	0.020	0.016	0.30810

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WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.400	1.467	0.019	0.015	0.29488
32258.06	0.3100	1.428	1.421	0.018	0.014	0.28071
33333.33	0.3000	1.470	1.380	0.017	0.013	0.26805
34482.76	0.2900	1.522	1.360	0.016	0.012	0.26081
35714.29	0.2800	1.569	1.365	0.016	0.012	0.26073
37037.04	0.2700	1.598	1.391	0.016	0.013	0.26648
38461.54	0.2600	1.600	1.431	0.017	0.013	0.27587
40000.00	0.2500	1.567	1.474	0.018	0.014	0.28703
41666.67	0.2400	1.497	1.500	0.019	0.015	0.29684
43478.26	0.2300	1.404	1.490	0.019	0.015	0.30040
45454.55	0.2200	1.315	1.439	0.019	0.015	0.29481
47619.05	0.2100	1.243	1.376	0.018	0.015	0.28453

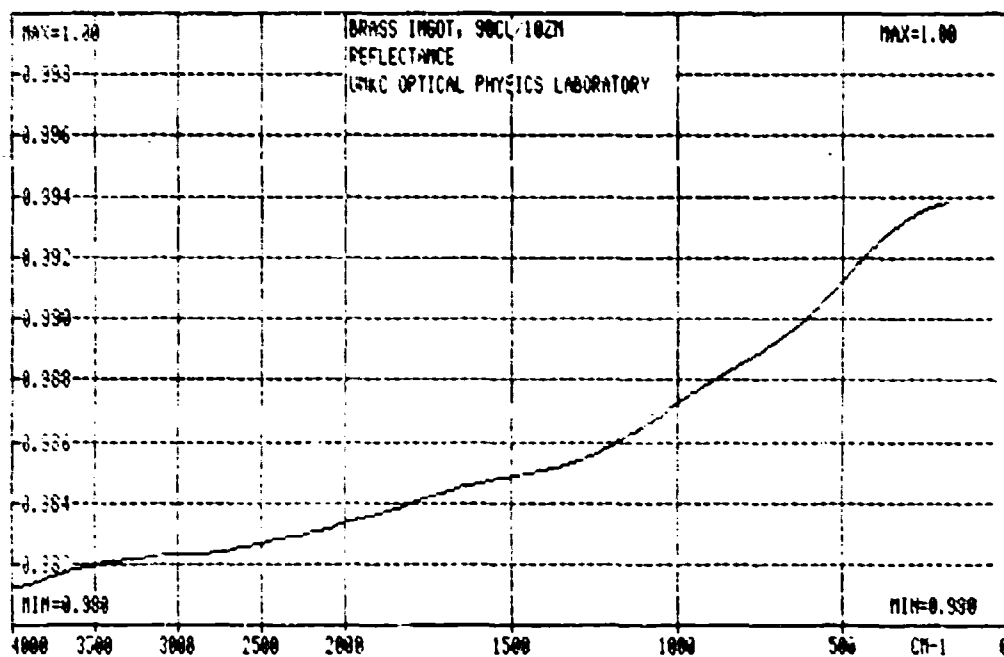


Figure 54. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of brass 90Cu/10Zn.

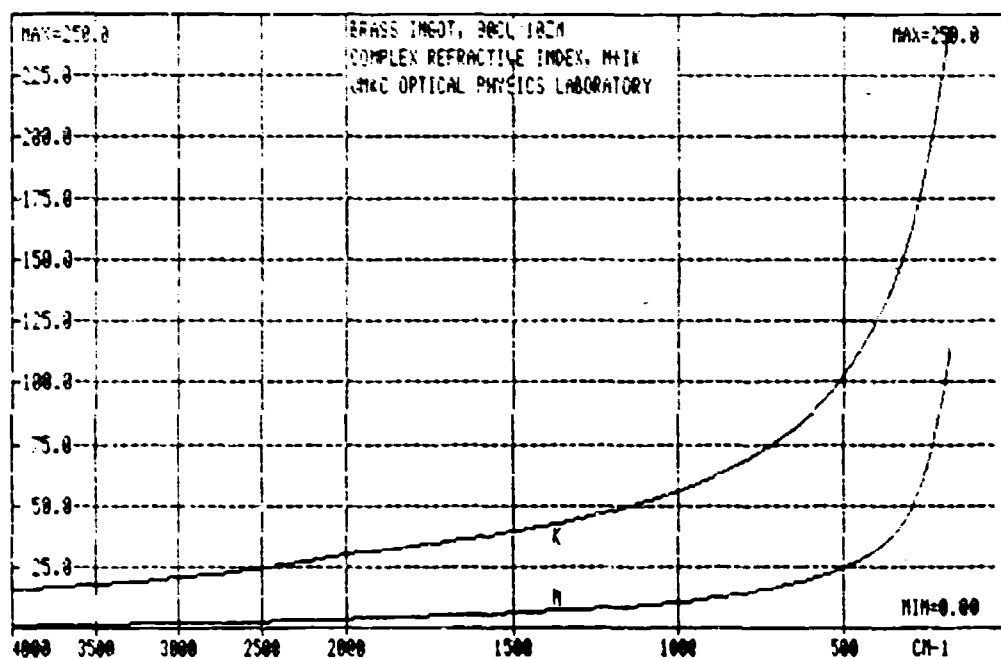


Figure 55. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for brass 90Cu/10Zn.

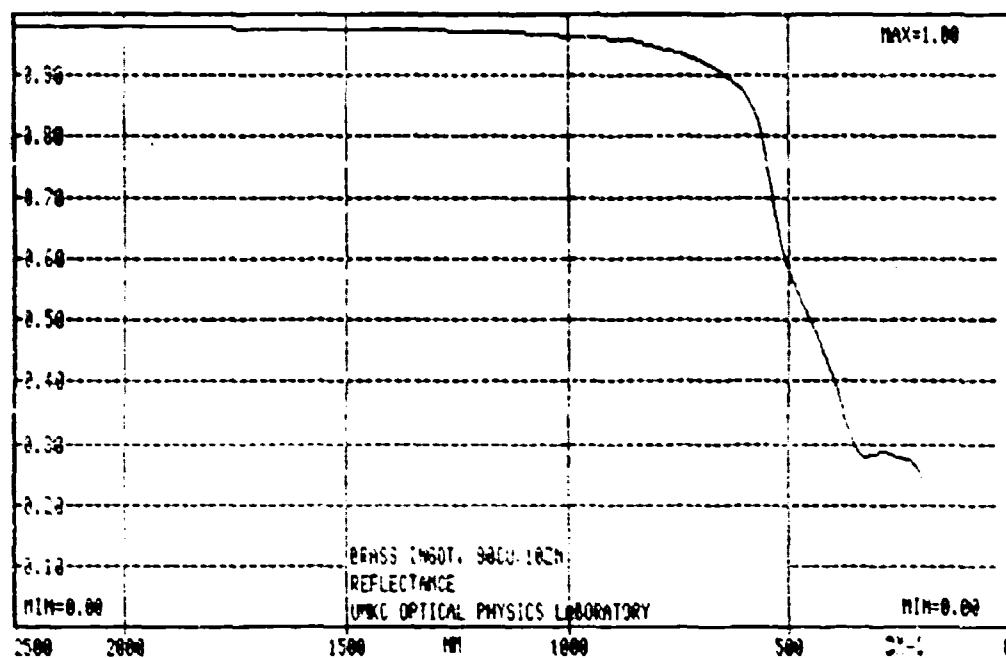


Figure 56. The uv-vis-nir (2,500–200 nm) reflectance spectrum of brass 90Cu/10Zn.

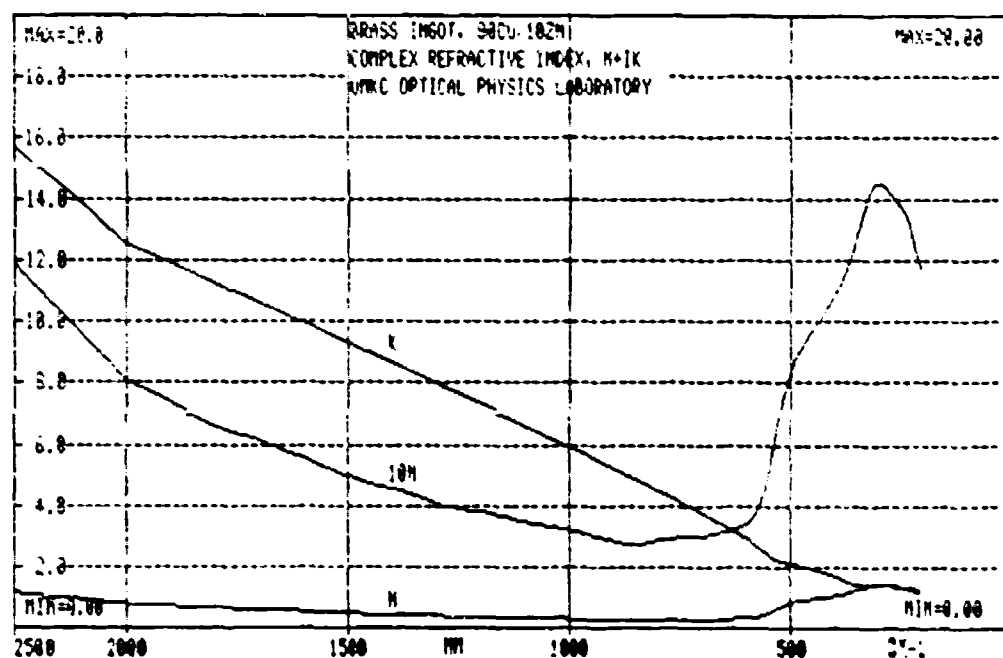


Figure 57. The uv-vis-nir (2,500–210 nm) complex refractive indices  $n$  and  $k$  for 90Cu/10Zn.

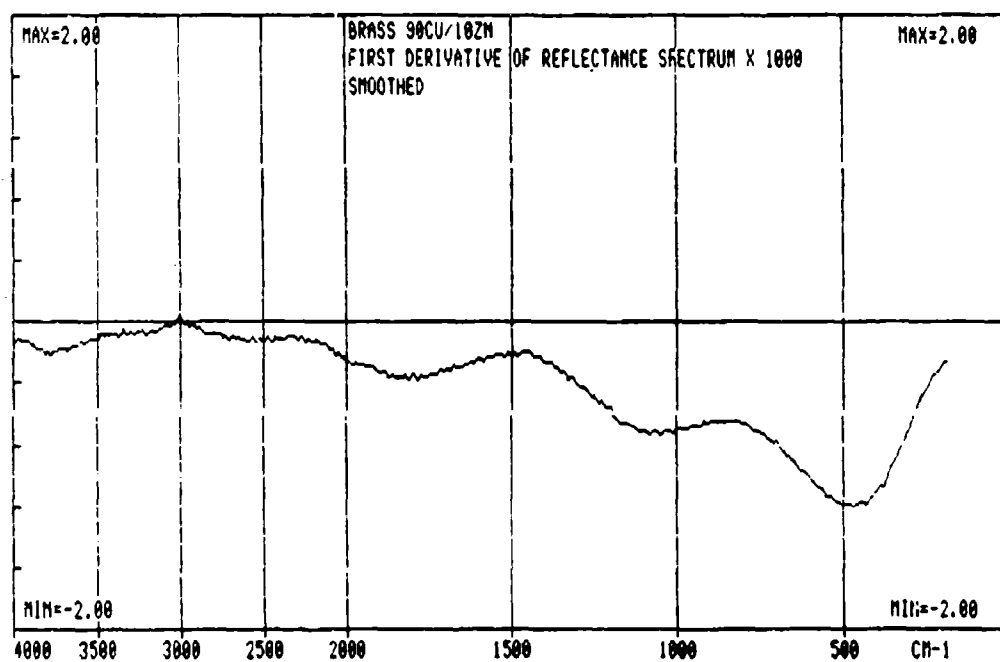


Figure 58. The first derivative of the infrared reflectance spectrum of brass 90Cu/10Zn.

WN	WL	N	K	DN	DK	R
180.00	55.5556	117.163	248.501	122.764	148.107	0.99385
190.00	52.6316	106.633	239.428	118.937	131.770	0.99385
200.00	50.0000	97.835	230.346	112.524	116.501	0.99381
210.00	47.6190	90.071	222.012	106.522	103.551	0.99378
220.00	45.4545	83.297	214.045	100.559	92.486	0.99374
230.00	43.4783	77.307	206.593	94.929	82.994	0.99371
240.00	41.6667	71.968	199.594	89.631	74.781	0.99367
250.00	40.0000	67.101	193.002	84.683	67.552	0.99363
260.00	38.4615	62.712	186.684	79.950	61.188	0.99359
270.00	37.0370	58.813	180.640	75.434	55.637	0.99354
280.00	35.7143	55.375	174.911	71.185	50.824	0.99348
290.00	34.4828	52.313	169.526	67.246	46.627	0.99342
300.00	33.3333	49.528	164.461	63.610	42.912	0.99335
310.00	32.2581	47.012	159.655	60.215	39.621	0.99328
320.00	31.2500	44.740	155.103	57.054	36.704	0.99320
330.00	30.3030	42.690	150.799	54.119	34.118	0.99312
340.00	29.4118	40.803	146.732	51.403	31.794	0.99303
350.00	28.5714	39.083	142.859	48.864	29.707	0.99294
360.00	27.7778	37.516	139.177	46.495	27.836	0.99285
370.00	27.0270	36.090	135.677	44.285	26.154	0.99275
380.00	26.3158	34.790	132.352	42.225	24.640	0.99264
390.00	25.6410	33.608	129.195	40.305	23.277	0.99253
400.00	25.0000	32.539	126.209	38.522	22.054	0.99242
410.00	24.3902	31.526	123.394	36.878	20.928	0.99231
420.00	23.8095	30.575	120.710	35.341	19.889	0.99219
430.00	23.2558	29.678	118.143	33.900	18.928	0.99208
440.00	22.7273	28.852	115.685	32.542	18.050	0.99197
450.00	22.2222	28.078	113.345	31.274	17.239	0.99185
460.00	21.7391	27.347	111.104	30.082	16.486	0.99173
470.00	21.2766	26.674	108.956	28.957	15.794	0.99161
480.00	20.8333	26.042	106.909	27.904	15.155	0.99149
490.00	20.4082	25.449	104.958	26.917	14.562	0.99137
500.00	20.0000	24.874	103.095	25.992	14.002	0.99125
510.00	19.6078	24.326	101.304	25.118	13.477	0.99113
520.00	19.2308	23.808	99.587	24.292	12.986	0.99102
530.00	18.8679	23.303	97.945	23.517	12.521	0.99091
540.00	18.5185	22.806	96.361	22.782	12.075	0.99080
550.00	18.1818	22.326	94.822	22.078	11.651	0.99069
560.00	17.8571	21.877	93.328	21.403	11.255	0.99058
570.00	17.5439	21.464	91.990	20.762	10.889	0.99047
580.00	17.2414	21.065	90.519	20.161	10.543	0.99036
590.00	16.9492	20.672	89.201	19.592	10.212	0.99025
600.00	16.6667	20.283	87.927	19.050	9.892	0.99015
610.00	16.3934	19.909	86.690	18.530	9.588	0.99005
620.00	16.1290	19.551	85.494	18.035	9.301	0.98995
630.00	15.8730	19.199	84.343	17.564	9.025	0.98986
640.00	15.6250	18.850	83.228	17.116	8.758	0.98977
650.00	15.3846	18.502	82.143	16.685	8.499	0.98968
660.00	15.1515	18.164	81.082	16.269	8.251	0.98960
670.00	14.9254	17.837	80.048	15.868	8.013	0.98952

WN	WL	N	K	DN	DK	R
680.00	14.7059	17.522	79.040	15.482	7.786	0.98943
690.00	14.4928	17.217	78.060	15.110	7.569	0.98935
700.00	14.2857	16.924	77.108	14.754	7.362	0.98927
710.00	14.0845	16.634	76.185	14.413	7.162	0.98919
720.00	13.8889	16.353	75.284	14.083	6.970	0.98911
730.00	13.6986	16.073	74.408	13.767	6.783	0.98904
740.00	13.5135	15.802	73.552	13.461	6.604	0.98897
750.00	13.3333	15.531	72.716	13.166	6.429	0.98890
760.00	13.1579	15.265	71.893	12.879	6.260	0.98883
770.00	12.9870	15.015	71.086	12.599	6.100	0.98876
780.00	12.8205	14.773	70.300	12.329	5.946	0.98869
790.00	12.6582	14.541	69.537	12.071	5.800	0.98862
800.00	12.5000	14.303	68.796	11.822	5.655	0.98856
810.00	12.3457	14.069	68.065	11.580	5.515	0.98849
820.00	12.1951	13.840	67.345	11.343	5.378	0.98843
830.00	12.0482	13.624	66.639	11.113	5.249	0.98837
840.00	11.9048	13.410	65.952	10.892	5.124	0.98831
850.00	11.7647	13.200	65.276	10.676	5.002	0.98824
860.00	11.6279	12.994	64.612	10.466	4.884	0.98818
870.00	11.4943	12.801	63.960	10.261	4.772	0.98812
880.00	11.3636	12.608	63.325	10.064	4.663	0.98806
890.00	11.2360	12.419	62.700	9.872	4.557	0.98799
900.00	11.1111	12.234	62.085	9.684	4.454	0.98793
910.00	10.9890	12.059	61.479	9.501	4.356	0.98787
920.00	10.8696	11.890	60.887	9.324	4.262	0.98780
930.00	10.7527	11.725	60.308	9.151	4.171	0.98773
940.00	10.6383	11.565	59.740	8.984	4.083	0.98767
950.00	10.5263	11.408	59.183	8.821	3.999	0.98760
960.00	10.4167	11.256	58.637	8.663	3.916	0.98753
970.00	10.3093	11.108	58.101	8.509	3.837	0.98747
980.00	10.2041	10.963	57.575	8.360	3.760	0.98740
990.00	10.1010	10.821	57.057	8.213	3.685	0.98733
1000.00	10.0000	10.687	56.547	8.071	3.614	0.98726
1010.00	9.9010	10.557	56.050	7.932	3.545	0.98719
1020.00	9.8039	10.431	55.564	7.798	3.479	0.98712
1030.00	9.7087	10.304	55.088	7.669	3.414	0.98705
1040.00	9.6154	10.179	54.618	7.541	3.350	0.98698
1050.00	9.5238	10.061	54.156	7.417	3.290	0.98691
1060.00	9.4340	9.947	53.703	7.296	3.231	0.98684
1070.00	9.3458	9.836	53.261	7.179	3.175	0.98677
1080.00	9.2593	9.724	52.828	7.065	3.119	0.98670
1090.00	9.1743	9.613	52.400	6.954	3.064	0.98663
1100.00	9.0909	9.509	51.978	6.845	3.012	0.98656
1110.00	9.0090	9.408	51.566	6.739	2.962	0.98649
1120.00	8.9286	9.309	51.163	6.636	2.913	0.98642
1130.00	8.8496	9.210	50.769	6.537	2.865	0.98635
1140.00	8.7719	9.113	50.381	6.439	2.819	0.98628
1150.00	8.6957	9.018	50.001	6.344	2.773	0.98622
1160.00	8.6207	8.922	49.628	6.252	2.729	0.98616
1170.00	8.5470	8.828	49.259	6.162	2.685	0.98609

WN	WL	N	K	DN	DK	R
1180.00	8.4746	8.735	48.896	6.073	2.642	0.98603
1190.00	8.4034	8.648	48.539	5.987	2.601	0.98597
1200.00	8.3333	8.560	48.192	5.904	2.561	0.98591
1210.00	8.2645	8.472	47.852	5.822	2.522	0.98585
1220.00	8.1967	8.381	47.517	5.743	2.483	0.98580
1230.00	8.1301	8.292	47.184	5.665	2.444	0.98575
1240.00	8.0645	8.204	46.857	5.588	2.406	0.98570
1250.00	8.0000	8.118	46.533	5.513	2.369	0.98565
1260.00	7.9365	8.034	46.215	5.440	2.334	0.98560
1270.00	7.8740	7.952	45.903	5.368	2.299	0.98555
1280.00	7.8125	7.869	45.598	5.299	2.264	0.98551
1290.00	7.7519	7.785	45.297	5.231	2.230	0.98547
1300.00	7.6923	7.698	44.998	5.164	2.196	0.98543
1310.00	7.6336	7.615	44.699	5.097	2.163	0.98539
1320.00	7.5758	7.537	44.405	5.032	2.131	0.98535
1330.00	7.5188	7.461	44.117	4.968	2.100	0.98531
1340.00	7.4627	7.384	43.837	4.907	2.070	0.98527
1350.00	7.4074	7.304	43.561	4.847	2.039	0.98524
1360.00	7.3529	7.224	43.287	4.788	2.009	0.98521
1370.00	7.2993	7.142	43.015	4.729	1.979	0.98519
1380.00	7.2464	7.064	42.744	4.672	1.949	0.98516
1390.00	7.1942	6.985	42.477	4.615	1.920	0.98514
1400.00	7.1429	6.909	42.212	4.559	1.892	0.98511
1410.00	7.0922	6.833	41.951	4.504	1.864	0.98509
1420.00	7.0423	6.760	41.691	4.450	1.837	0.98506
1430.00	6.9930	6.686	41.437	4.397	1.811	0.98504
1440.00	6.9444	6.613	41.185	4.345	1.785	0.98502
1450.00	6.8966	6.539	40.935	4.294	1.759	0.98500
1460.00	6.8493	6.465	40.687	4.243	1.733	0.98498
1470.00	6.8027	6.395	40.439	4.193	1.708	0.98496
1480.00	6.7568	6.326	40.194	4.143	1.684	0.98494
1490.00	6.7114	6.260	39.953	4.095	1.660	0.98491
1500.00	6.6667	6.194	39.715	4.048	1.637	0.98489
1510.00	6.6225	6.129	39.481	4.001	1.615	0.98487
1520.00	6.5789	6.062	39.249	3.955	1.592	0.98485
1530.00	6.5359	5.996	39.017	3.910	1.570	0.98483
1540.00	6.4935	5.933	38.787	3.865	1.548	0.98481
1550.00	6.4516	5.871	38.559	3.821	1.527	0.98479
1560.00	6.4103	5.812	38.334	3.777	1.507	0.98476
1570.00	6.3694	5.753	38.112	3.734	1.487	0.98474
1580.00	6.3291	5.696	37.892	3.692	1.467	0.98471
1590.00	6.2893	5.638	37.675	3.651	1.448	0.98469
1600.00	6.2500	5.583	37.460	3.610	1.429	0.98466
1610.00	6.2112	5.527	37.247	3.570	1.411	0.98464
1620.00	6.1728	5.473	37.036	3.531	1.393	0.98461
1630.00	6.1350	5.419	36.828	3.492	1.375	0.98459
1640.00	6.0976	5.367	36.620	3.454	1.357	0.98456
1650.00	6.0606	5.315	36.415	3.416	1.340	0.98453
1660.00	6.0241	5.267	36.211	3.378	1.324	0.98450
1670.00	5.9880	5.219	36.010	3.342	1.308	0.98447



WN	WL	N	K	DN	DK	R
1680.00	5.9524	5.173	35.813	3.306	1.292	0.98443
1690.00	5.9172	5.127	35.617	3.271	1.277	0.98440
1700.00	5.8824	5.081	35.424	3.236	1.262	0.98437
1710.00	5.8480	5.037	35.233	3.202	1.247	0.98433
1720.00	5.8140	4.993	35.044	3.168	1.233	0.98430
1730.00	5.7803	4.950	34.857	3.135	1.219	0.98427
1740.00	5.7471	4.907	34.672	3.103	1.205	0.98423
1750.00	5.7143	4.866	34.490	3.071	1.191	0.98420
1760.00	5.6818	4.824	34.309	3.039	1.178	0.98417
1770.00	5.6497	4.784	34.129	3.008	1.165	0.98413
1780.00	5.6180	4.745	33.951	2.977	1.152	0.98409
1790.00	5.5866	4.707	33.776	2.947	1.140	0.98406
1800.00	5.5556	4.670	33.603	2.918	1.128	0.98402
1810.00	5.5249	4.632	33.433	2.889	1.116	0.98398
1820.00	5.4945	4.596	33.263	2.860	1.104	0.98394
1830.00	5.4645	4.561	33.096	2.832	1.092	0.98391
1840.00	5.4348	4.526	32.932	2.805	1.081	0.98387
1850.00	5.4054	4.491	32.770	2.778	1.070	0.98383
1860.00	5.3763	4.456	32.609	2.751	1.059	0.98380
1870.00	5.3476	4.421	32.450	2.725	1.048	0.98377
1880.00	5.3191	4.387	32.292	2.699	1.038	0.98373
1890.00	5.2910	4.353	32.136	2.673	1.027	0.98370
1900.00	5.2632	4.320	31.981	2.648	1.017	0.98367
1910.00	5.2356	4.287	31.829	2.623	1.007	0.98363
1920.00	5.2083	4.255	31.678	2.599	0.997	0.98360
1930.00	5.1813	4.223	31.529	2.575	0.987	0.98357
1940.00	5.1546	4.190	31.382	2.551	0.977	0.98354
1950.00	5.1282	4.158	31.236	2.528	0.968	0.98351
1960.00	5.1020	4.125	31.092	2.505	0.958	0.98349
1970.00	5.0761	4.094	30.948	2.483	0.949	0.98346
1980.00	5.0505	4.061	30.806	2.460	0.939	0.98344
1990.00	5.0251	4.030	30.665	2.438	0.930	0.98341
2000.00	5.0000	3.999	30.525	2.416	0.921	0.98339
2010.00	4.9751	3.969	30.386	2.395	0.912	0.98336
2020.00	4.9505	3.938	30.249	2.374	0.904	0.98334
2030.00	4.9261	3.909	30.113	2.353	0.895	0.98331
2040.00	4.9020	3.879	29.979	2.332	0.887	0.98329
2050.00	4.8780	3.851	29.845	2.312	0.878	0.98326
2060.00	4.8544	3.822	29.714	2.292	0.870	0.98324
2070.00	4.8309	3.793	29.584	2.272	0.862	0.98322
2080.00	4.8077	3.763	29.456	2.253	0.854	0.98320
2090.00	4.7847	3.734	29.328	2.234	0.846	0.98318
2100.00	4.7619	3.705	29.201	2.215	0.838	0.98317
2110.00	4.7393	3.676	29.076	2.196	0.830	0.98316
2120.00	4.7170	3.646	28.951	2.178	0.822	0.98314
2130.00	4.6948	3.617	28.826	2.159	0.815	0.98313
2140.00	4.6729	3.589	28.701	2.141	0.807	0.98312
2150.00	4.6512	3.561	28.578	2.123	0.800	0.98310
2160.00	4.6296	3.534	28.457	2.105	0.792	0.98308
2170.00	4.6083	3.508	28.337	2.088	0.785	0.98307

WN	WL	N	K	DN	DK	R
2180.00	4.5872	3.480	28.218	2.071	0.778	0.98306
2190.00	4.5662	3.453	28.099	2.054	0.771	0.98304
2200.00	4.5455	3.426	27.981	2.037	0.764	0.98303
2210.00	4.5249	3.400	27.864	2.020	0.757	0.98302
2220.00	4.5045	3.374	27.748	2.003	0.750	0.98301
2230.00	4.4843	3.348	27.633	1.987	0.744	0.98299
2240.00	4.4643	3.322	27.519	1.971	0.737	0.98298
2250.00	4.4444	3.298	27.406	1.955	0.731	0.98297
2260.00	4.4248	3.273	27.294	1.939	0.724	0.98296
2270.00	4.4053	3.247	27.183	1.924	0.718	0.98295
2280.00	4.3860	3.222	27.072	1.908	0.711	0.98294
2290.00	4.3668	3.197	26.961	1.893	0.705	0.98293
2300.00	4.3478	3.174	26.852	1.878	0.699	0.98292
2310.00	4.3290	3.150	26.744	1.863	0.693	0.98291
2320.00	4.3103	3.126	26.637	1.849	0.687	0.98290
2330.00	4.2918	3.102	26.530	1.834	0.681	0.98289
2340.00	4.2735	3.078	26.423	1.819	0.675	0.98288
2350.00	4.2553	3.057	26.317	1.805	0.670	0.98287
2360.00	4.2373	3.034	26.213	1.791	0.664	0.98286
2370.00	4.2194	3.012	26.109	1.777	0.659	0.98284
2380.00	4.2017	2.990	26.006	1.763	0.653	0.98283
2390.00	4.1841	2.969	25.904	1.750	0.648	0.98282
2400.00	4.1667	2.948	25.803	1.736	0.643	0.98281
2410.00	4.1494	2.926	25.703	1.723	0.637	0.98280
2420.00	4.1322	2.904	25.603	1.710	0.632	0.98279
2430.00	4.1152	2.883	25.503	1.697	0.627	0.98278
2440.00	4.0984	2.863	25.404	1.684	0.622	0.98277
2450.00	4.0816	2.843	25.306	1.671	0.617	0.98276
2460.00	4.0650	2.822	25.209	1.658	0.612	0.98274
2470.00	4.0486	2.802	25.112	1.646	0.607	0.98273
2480.00	4.0323	2.784	25.016	1.634	0.602	0.98272
2490.00	4.0161	2.764	24.922	1.621	0.598	0.98271
2500.00	4.0000	2.745	24.828	1.609	0.593	0.98269
2510.00	3.9841	2.726	24.734	1.597	0.589	0.98268
2520.00	3.9683	2.708	24.641	1.586	0.584	0.98267
2530.00	3.9526	2.689	24.549	1.574	0.580	0.98266
2540.00	3.9370	2.671	24.458	1.562	0.575	0.98264
2550.00	3.9216	2.653	24.366	1.551	0.571	0.98263
2560.00	3.9063	2.635	24.276	1.540	0.567	0.98262
2570.00	3.8911	2.618	24.187	1.529	0.562	0.98261
2580.00	3.8760	2.600	24.098	1.518	0.558	0.98259
2590.00	3.8610	2.582	24.010	1.507	0.554	0.98258
2600.00	3.8462	2.566	23.923	1.496	0.550	0.98257
2610.00	3.8314	2.549	23.836	1.485	0.546	0.98256
2620.00	3.8168	2.531	23.751	1.475	0.542	0.98255
2630.00	3.8023	2.514	23.665	1.464	0.538	0.98254
2640.00	3.7879	2.497	23.579	1.454	0.534	0.98253
2650.00	3.7736	2.481	23.494	1.443	0.530	0.98252
2660.00	3.7594	2.465	23.411	1.433	0.526	0.98251
2670.00	3.7453	2.449	23.327	1.423	0.523	0.98249

WN	WL	N	K	DN	DK	R
2680.00	3.7313	2.433	23.244	1.413	0.519	0.98248
2690.00	3.7175	2.418	23.162	1.404	0.515	0.98247
2700.00	3.7037	2.403	23.082	1.394	0.512	0.98246
2710.00	3.6900	2.387	23.002	1.384	0.508	0.98245
2720.00	3.6765	2.370	22.922	1.375	0.505	0.98245
2730.00	3.6630	2.354	22.841	1.365	0.501	0.98244
2740.00	3.6496	2.339	22.761	1.356	0.497	0.98243
2750.00	3.6364	2.325	22.682	1.347	0.494	0.98242
2760.00	3.6232	2.310	22.604	1.338	0.491	0.98241
2770.00	3.6101	2.295	22.527	1.329	0.487	0.98240
2780.00	3.5971	2.280	22.449	1.320	0.484	0.98239
2790.00	3.5842	2.266	22.372	1.311	0.481	0.98238
2800.00	3.5714	2.252	22.296	1.302	0.478	0.98237
2810.00	3.5587	2.239	22.221	1.293	0.474	0.98236
2820.00	3.5461	2.224	22.147	1.285	0.471	0.98235
2830.00	3.5336	2.209	22.073	1.276	0.468	0.98235
2840.00	3.5211	2.194	21.999	1.268	0.465	0.98235
2850.00	3.5088	2.180	21.925	1.259	0.462	0.98235
2860.00	3.4965	2.165	21.851	1.251	0.459	0.98234
2870.00	3.4843	2.152	21.777	1.243	0.456	0.98233
2880.00	3.4722	2.140	21.704	1.235	0.453	0.98232
2890.00	3.4602	2.127	21.633	1.227	0.450	0.98231
2900.00	3.4483	2.114	21.563	1.219	0.447	0.98230
2910.00	3.4364	2.100	21.493	1.211	0.444	0.98230
2920.00	3.4247	2.086	21.423	1.203	0.441	0.98230
2930.00	3.4130	2.073	21.353	1.195	0.438	0.98230
2940.00	3.4014	2.059	21.283	1.188	0.435	0.98230
2950.00	3.3898	2.046	21.214	1.180	0.432	0.98230
2960.00	3.3784	2.032	21.145	1.172	0.430	0.98230
2970.00	3.3670	2.019	21.077	1.165	0.427	0.98230
2980.00	3.3557	2.006	21.009	1.158	0.424	0.98230
2990.00	3.3445	1.993	20.941	1.150	0.421	0.98230
3000.00	3.3333	1.980	20.873	1.143	0.419	0.98230
3010.00	3.3223	1.967	20.806	1.136	0.416	0.98230
3020.00	3.3113	1.954	20.740	1.128	0.413	0.98230
3030.00	3.3003	1.942	20.673	1.121	0.411	0.98230
3040.00	3.2895	1.929	20.607	1.114	0.408	0.98230
3050.00	3.2787	1.917	20.542	1.107	0.406	0.98230
3060.00	3.2680	1.905	20.476	1.100	0.403	0.98230
3070.00	3.2573	1.893	20.411	1.093	0.400	0.98230
3080.00	3.2468	1.881	20.346	1.086	0.398	0.98230
3090.00	3.2362	1.869	20.282	1.080	0.396	0.98230
3100.00	3.2258	1.857	20.217	1.073	0.393	0.98230
3110.00	3.2154	1.845	20.153	1.066	0.391	0.98229
3120.00	3.2051	1.835	20.089	1.059	0.388	0.98228
3130.00	3.1949	1.825	20.026	1.053	0.386	0.98227
3140.00	3.1847	1.815	19.964	1.046	0.384	0.98226
3150.00	3.1746	1.804	19.902	1.040	0.382	0.98225
3160.00	3.1646	1.793	19.841	1.034	0.379	0.98225
3170.00	3.1546	1.782	19.780	1.027	0.377	0.98225

WN	WL	N	K	DN	DK	R
3180.00	3.1447	1.771	19.719	1.021	0.373	0.98225
3190.00	3.1348	1.760	19.657	1.015	0.373	0.98224
3200.00	3.1250	1.750	19.596	1.009	0.371	0.98223
3210.00	3.1153	1.741	19.536	1.003	0.369	0.98222
3220.00	3.1056	1.732	19.477	0.997	0.367	0.98221
3230.00	3.0960	1.722	19.419	0.991	0.364	0.98220
3240.00	3.0864	1.712	19.360	0.985	0.362	0.98220
3250.00	3.0769	1.701	19.302	0.979	0.360	0.98220
3260.00	3.0675	1.691	19.243	0.973	0.358	0.98220
3270.00	3.0581	1.681	19.185	0.967	0.356	0.98219
3280.00	3.0488	1.672	19.126	0.961	0.354	0.98218
3290.00	3.0395	1.663	19.069	0.956	0.352	0.98217
3300.00	3.0303	1.655	19.012	0.950	0.350	0.98216
3310.00	3.0211	1.645	18.956	0.945	0.349	0.98215
3320.00	3.0120	1.636	18.900	0.939	0.347	0.98215
3330.00	3.0030	1.626	18.844	0.934	0.345	0.98214
3340.00	2.9940	1.618	18.787	0.928	0.343	0.98213
3350.00	2.9851	1.609	18.732	0.923	0.341	0.98212
3360.00	2.9762	1.601	18.677	0.917	0.339	0.98211
3370.00	2.9674	1.592	18.623	0.912	0.337	0.98210
3380.00	2.9586	1.583	18.569	0.907	0.336	0.98210
3390.00	2.9499	1.574	18.515	0.902	0.334	0.98210
3400.00	2.9412	1.565	18.460	0.896	0.332	0.98209
3410.00	2.9326	1.557	18.406	0.891	0.330	0.98208
3420.00	2.9240	1.549	18.353	0.886	0.329	0.98207
3430.00	2.9155	1.541	18.300	0.881	0.327	0.98206
3440.00	2.9070	1.533	18.247	0.876	0.325	0.98205
3450.00	2.8986	1.524	18.195	0.871	0.324	0.98204
3460.00	2.8902	1.516	18.142	0.866	0.322	0.98203
3470.00	2.8818	1.509	18.090	0.861	0.320	0.98202
3480.00	2.8736	1.502	18.039	0.856	0.319	0.98201
3490.00	2.8653	1.494	17.988	0.852	0.317	0.98200
3500.00	2.8571	1.485	17.936	0.847	0.315	0.98199
3510.00	2.8490	1.478	17.885	0.842	0.314	0.98198
3520.00	2.8409	1.471	17.835	0.837	0.312	0.98197
3530.00	2.8329	1.464	17.785	0.833	0.311	0.98196
3540.00	2.8249	1.456	17.735	0.828	0.309	0.98195
3550.00	2.8169	1.448	17.685	0.823	0.308	0.98194
3560.00	2.8090	1.441	17.635	0.819	0.306	0.98193
3570.00	2.8011	1.434	17.585	0.814	0.305	0.98192
3580.00	2.7933	1.427	17.536	0.810	0.303	0.98190
3590.00	2.7855	1.421	17.487	0.805	0.302	0.98188
3600.00	2.7778	1.414	17.438	0.801	0.300	0.98187
3610.00	2.7701	1.408	17.390	0.797	0.299	0.98185
3620.00	2.7624	1.401	17.342	0.792	0.298	0.98183
3630.00	2.7548	1.395	17.295	0.788	0.296	0.98182
3640.00	2.7473	1.388	17.247	0.784	0.295	0.98180
3650.00	2.7397	1.382	17.200	0.780	0.294	0.98178
3660.00	2.7322	1.376	17.153	0.775	0.292	0.98177
3670.00	2.7248	1.370	17.107	0.771	0.291	0.98175

WN	WL	N	K	DN	DK	R
3680.00	2.7174	1.363	17.060	0.767	0.290	0.98173
3690.00	2.7100	1.357	17.014	0.763	0.288	0.98172
3700.00	2.7027	1.351	16.968	0.759	0.287	0.98170
3710.00	2.6954	1.345	16.923	0.755	0.286	0.98168
3720.00	2.6882	1.340	16.877	0.751	0.284	0.98166
3730.00	2.6810	1.334	16.832	0.747	0.283	0.98164
3740.00	2.6738	1.329	16.787	0.743	0.282	0.98162
3750.00	2.6667	1.323	16.743	0.739	0.281	0.98160
3760.00	2.6596	1.317	16.699	0.735	0.280	0.98158
3770.00	2.6525	1.312	16.654	0.732	0.278	0.98156
3780.00	2.6455	1.306	16.611	0.728	0.277	0.98154
3790.00	2.6385	1.301	16.567	0.724	0.276	0.98152
3800.00	2.6316	1.296	16.524	0.720	0.275	0.98150
3810.00	2.6247	1.290	16.481	0.717	0.274	0.98148
3820.00	2.6178	1.285	16.438	0.713	0.273	0.98146
3830.00	2.6110	1.280	16.396	0.709	0.271	0.98144
3840.00	2.6042	1.275	16.354	0.706	0.270	0.98142
3850.00	2.5974	1.269	16.312	0.702	0.269	0.98140
3860.00	2.5907	1.264	16.271	0.699	0.268	0.98138
3870.00	2.5840	1.259	16.229	0.695	0.267	0.98137
3880.00	2.5773	1.253	16.188	0.692	0.266	0.98136
3890.00	2.5707	1.248	16.147	0.688	0.265	0.98134
3900.00	2.5641	1.242	16.106	0.685	0.264	0.98133
3910.00	2.5575	1.237	16.065	0.681	0.263	0.98132
3920.00	2.5510	1.232	16.025	0.678	0.261	0.98130
3930.00	2.5445	1.227	15.985	0.675	0.260	0.98128
3940.00	2.5381	1.222	15.945	0.671	0.259	0.98127
3950.00	2.5316	1.216	15.905	0.668	0.258	0.98126
3960.00	2.5253	1.211	15.866	0.665	0.257	0.98125
3970.00	2.5189	1.205	15.827	0.662	0.256	0.98125
3980.00	2.5126	1.199	15.787	0.658	0.255	0.98124
3990.00	2.5063	1.194	15.747	0.655	0.254	0.98123
4000.00	2.5000	1.188	15.706	0.652	0.253	0.98122
4016.06	2.4900	1.184	15.645	0.647	0.252	0.98115
4032.26	2.4800	1.174	15.584	0.642	0.250	0.98115
4048.58	2.4700	1.165	15.520	0.637	0.248	0.98114
4065.04	2.4600	1.159	15.460	0.632	0.247	0.98110
4081.63	2.4500	1.149	15.398	0.627	0.245	0.98110
4098.36	2.4400	1.140	15.333	0.621	0.243	0.98109
4115.23	2.4300	1.134	15.272	0.617	0.242	0.98105
4132.23	2.4200	1.125	15.208	0.611	0.240	0.98104
4149.38	2.4100	1.118	15.147	0.607	0.239	0.98100
4166.67	2.4000	1.109	15.085	0.602	0.237	0.98100
4184.10	2.3900	1.102	15.020	0.597	0.235	0.98097
4201.68	2.3800	1.094	14.960	0.592	0.234	0.98095
4219.41	2.3700	1.085	14.895	0.587	0.232	0.98093
4237.29	2.3600	1.078	14.835	0.582	0.231	0.98090
4255.32	2.3500	1.069	14.772	0.577	0.229	0.98090
4273.50	2.3400	1.062	14.707	0.572	0.228	0.98086
4291.85	2.3300	1.054	14.646	0.568	0.226	0.98085

WN	WL	N	K	DN	DK	R
4310.35	2.3200	1.046	14.582	0.563	0.224	0.98082
4329.00	2.3100	1.039	14.521	0.558	0.223	0.98080
4347.83	2.3000	1.030	14.458	0.553	0.221	0.98080
4366.81	2.2900	1.023	14.394	0.549	0.220	0.98075
4385.96	2.2800	1.015	14.333	0.544	0.218	0.98075
4405.29	2.2700	1.006	14.269	0.539	0.217	0.98075
4424.78	2.2600	0.999	14.206	0.534	0.215	0.98070
4444.44	2.2500	0.991	14.143	0.530	0.214	0.98070
4464.29	2.2400	0.984	14.080	0.525	0.212	0.98065
4484.30	2.2300	0.976	14.017	0.521	0.211	0.98065
4504.50	2.2200	0.967	13.954	0.516	0.209	0.98065
4524.89	2.2100	0.960	13.889	0.511	0.208	0.98060
4545.45	2.2000	0.952	13.825	0.507	0.206	0.98059
4566.21	2.1900	0.945	13.762	0.502	0.205	0
4587.16	2.1800	0.939	13.698	0.497	0.204	
4608.29	2.1700	0.931	13.634	0.493	0.202	
4629.63	2.1600	0.924	13.571	0.488	0.201	0.
4651.16	2.1500	0.918	13.509	0.484	0.199	0.98040
4672.90	2.1400	0.912	13.445	0.480	0.198	0.98035
4694.84	2.1300	0.906	13.383	0.475	0.197	0.98030
4716.98	2.1200	0.899	13.319	0.471	0.195	0.98027
4739.34	2.1100	0.891	13.257	0.466	0.194	0.98025
4761.90	2.1000	0.885	13.195	0.462	0.193	0.98020
4784.69	2.0900	0.877	13.133	0.458	0.191	0.98020
4807.69	2.0800	0.869	13.069	0.453	0.190	0.98019
4830.92	2.0700	0.862	13.007	0.449	0.188	0.98015
4854.37	2.0600	0.854	12.945	0.445	0.187	0.98015
4878.05	2.0500	0.846	12.881	0.441	0.185	0.98015
4901.96	2.0400	0.837	12.818	0.436	0.184	0.98015
4926.11	2.0300	0.829	12.754	0.432	0.183	0.98015
4950.50	2.0200	0.823	12.690	0.428	0.181	0.98010
4975.12	2.0100	0.815	12.627	0.424	0.180	0.98010
5000.00	2.0000	0.807	12.563	0.419	0.178	0.98010
5025.13	1.9900	0.800	12.498	0.415	0.177	0.98005
5050.50	1.9800	0.792	12.435	0.411	0.176	0.98005
5076.14	1.9700	0.784	12.370	0.407	0.174	0.98005
5102.04	1.9600	0.778	12.306	0.403	0.173	0.98000
5128.20	1.9500	0.770	12.242	0.399	0.172	0.98000
5154.64	1.9400	0.764	12.178	0.394	0.170	0.97995
5181.35	1.9300	0.756	12.114	0.390	0.169	0.97995
5208.33	1.9200	0.748	12.049	0.386	0.168	0.97995
5235.60	1.9100	0.742	11.985	0.382	0.166	0.97990
5263.16	1.9000	0.734	11.921	0.378	0.165	0.97990
5291.00	1.8900	0.728	11.855	0.374	0.164	0.97985
5319.15	1.8800	0.720	11.790	0.370	0.162	0.97985
5347.59	1.8700	0.714	11.726	0.366	0.161	0.97980
5376.34	1.8600	0.706	11.660	0.362	0.160	0.97978
5405.40	1.8500	0.700	11.596	0.358	0.159	0.97975
5434.78	1.8400	0.694	11.532	0.354	0.157	0.97970
5464.48	1.8300	0.686	11.466	0.350	0.156	0.97970

WN	WL	N	K	DN	DK	R
5494.50	1.8200	0.680	11.401	0.346	0.155	0.97965
5524.86	1.8100	0.672	11.336	0.342	0.153	0.97965
5555.56	1.8000	0.666	11.270	0.339	0.152	0.97960
5586.59	1.7900	0.660	11.203	0.335	0.151	0.97955
5617.98	1.7800	0.655	11.136	0.331	0.150	0.97946
5649.72	1.7700	0.651	11.071	0.327	0.149	0.97935
5681.82	1.7600	0.646	11.005	0.323	0.148	0.97927
5714.29	1.7500	0.642	10.940	0.319	0.146	0.97916
5747.13	1.7400	0.638	10.875	0.316	0.145	0.97904
5780.35	1.7300	0.634	10.810	0.312	0.144	0.97891
5813.95	1.7200	0.631	10.747	0.309	0.143	0.97878
5847.95	1.7100	0.626	10.685	0.305	0.142	0.97870
5882.35	1.7000	0.620	10.622	0.302	0.141	0.97865
5917.16	1.6900	0.614	10.558	0.298	0.140	0.97860
5952.38	1.6800	0.607	10.494	0.295	0.139	0.97860
5988.02	1.6700	0.601	10.430	0.291	0.138	0.97855
6024.10	1.6600	0.595	10.365	0.287	0.136	0.97850
6060.61	1.6500	0.589	10.301	0.284	0.135	0.97845
6097.56	1.6400	0.582	10.235	0.280	0.134	0.97843
6134.97	1.6300	0.577	10.170	0.277	0.133	0.97836
6172.84	1.6200	0.571	10.104	0.273	0.132	0.97828
6211.18	1.6100	0.567	10.040	0.270	0.131	0.97818
6250.00	1.6000	0.562	9.976	0.267	0.130	0.97811
6289.31	1.5900	0.555	9.912	0.263	0.129	0.97810
6329.11	1.5800	0.548	9.846	0.260	0.127	0.97809
6369.43	1.5700	0.542	9.781	0.257	0.126	0.97805
6410.26	1.5600	0.536	9.715	0.253	0.125	0.97799
6451.61	1.5500	0.531	9.650	0.250	0.124	0.97790
6493.51	1.5400	0.525	9.584	0.247	0.123	0.97783
6535.95	1.5300	0.520	9.519	0.243	0.122	0.97775
6578.95	1.5200	0.514	9.453	0.240	0.121	0.97770
6622.52	1.5100	0.508	9.387	0.237	0.120	0.97765
6666.67	1.5000	0.503	9.321	0.233	0.118	0.97758
6711.41	1.4900	0.497	9.255	0.230	0.117	0.97751
6756.76	1.4800	0.492	9.188	0.227	0.116	0.97744
6802.72	1.4700	0.487	9.121	0.224	0.115	0.97736
6849.31	1.4600	0.482	9.055	0.221	0.114	0.97726
6896.55	1.4500	0.477	8.987	0.217	0.113	0.97714
6944.44	1.4400	0.473	8.920	0.214	0.112	0.97700
6993.01	1.4300	0.470	8.853	0.211	0.111	0.97682
7042.25	1.4200	0.467	8.787	0.208	0.110	0.97663
7092.20	1.4100	0.464	8.721	0.205	0.109	0.97643
7142.86	1.4000	0.461	8.655	0.202	0.108	0.97624
7194.25	1.3900	0.457	8.591	0.199	0.107	0.97608
7246.38	1.3800	0.453	8.526	0.196	0.106	0.97596
7299.27	1.3700	0.448	8.460	0.193	0.105	0.97585
7352.94	1.3600	0.443	8.394	0.191	0.104	0.97572
7407.41	1.3500	0.439	8.328	0.188	0.103	0.97557
7462.69	1.3400	0.435	8.262	0.185	0.102	0.97542
7518.80	1.3300	0.431	8.197	0.182	0.101	0.97527

WN	WL	N	K	DN	DK	R
7575.76	1.3200	0.425	8.131	0.179	0.100	0.97520
7633.59	1.3100	0.420	8.065	0.176	0.099	0.97511
7692.31	1.3000	0.415	7.997	0.173	0.098	0.97502
7751.94	1.2900	0.410	7.930	0.171	0.097	0.97487
7812.50	1.2800	0.406	7.862	0.168	0.096	0.97468
7874.02	1.2700	0.403	7.794	0.165	0.095	0.97446
7936.51	1.2600	0.399	7.728	0.162	0.094	0.97427
8000.00	1.2500	0.395	7.660	0.160	0.094	0.97409
8064.52	1.2400	0.391	7.592	0.157	0.093	0.97392
8130.08	1.2300	0.388	7.524	0.154	0.092	0.97366
8196.72	1.2200	0.386	7.455	0.152	0.091	0.97332
8264.46	1.2100	0.385	7.388	0.149	0.090	0.97291
8333.33	1.2000	0.384	7.322	0.147	0.089	0.97252
8403.36	1.1900	0.381	7.257	0.144	0.088	0.97224
8474.58	1.1800	0.378	7.191	0.142	0.087	0.97199
8547.01	1.1700	0.374	7.124	0.139	0.086	0.97175
8620.69	1.1600	0.371	7.057	0.137	0.085	0.97147
8695.65	1.1500	0.368	6.990	0.134	0.085	0.97117
8771.93	1.1400	0.365	6.924	0.132	0.084	0.97089
8849.56	1.1300	0.361	6.857	0.129	0.083	0.97063
8928.57	1.1200	0.357	6.790	0.127	0.082	0.97039
9009.01	1.1100	0.354	6.722	0.125	0.081	0.97011
9090.91	1.1000	0.350	6.654	0.122	0.080	0.96978
9174.31	1.0900	0.348	6.585	0.120	0.079	0.96940
9259.26	1.0800	0.346	6.518	0.117	0.078	0.96899
9345.79	1.0700	0.343	6.450	0.115	0.077	0.96856
9433.96	1.0600	0.341	6.382	0.113	0.076	0.96815
9523.81	1.0500	0.339	6.315	0.111	0.076	0.96771
9615.38	1.0400	0.336	6.247	0.108	0.075	0.96726
9708.74	1.0300	0.333	6.180	0.106	0.074	0.96684
9803.92	1.0200	0.330	6.113	0.104	0.073	0.96647
9900.99	1.0100	0.327	6.044	0.102	0.072	0.96610
10000.00	1.0000	0.323	5.976	0.100	0.071	0.96569
10101.01	0.9900	0.321	5.907	0.098	0.070	0.96520
10204.08	0.9800	0.318	5.839	0.096	0.069	0.96471
10309.28	0.9700	0.315	5.771	0.093	0.069	0.96425
10416.67	0.9600	0.312	5.702	0.091	0.068	0.96382
10526.32	0.9500	0.308	5.634	0.089	0.067	0.96345
10638.30	0.9400	0.303	5.564	0.087	0.066	0.96316
10752.69	0.9300	0.298	5.493	0.085	0.065	0.96280
10869.56	0.9200	0.295	5.421	0.083	0.064	0.96223
10989.01	0.9100	0.293	5.350	0.081	0.063	0.96160
11111.11	0.9000	0.289	5.280	0.079	0.062	0.96109
11235.95	0.8900	0.284	5.208	0.077	0.061	0.96071
11363.64	0.8800	0.280	5.133	0.075	0.060	0.96018
11494.25	0.8700	0.279	5.057	0.073	0.059	0.95929
11627.91	0.8600	0.279	4.983	0.071	0.059	0.95817
11764.71	0.8500	0.278	4.908	0.069	0.058	0.95703
11904.76	0.8400	0.278	4.833	0.067	0.057	0.95578
12048.19	0.8300	0.280	4.757	0.066	0.056	0.95416



WN	WL	N	K	DN	DK	R
12195.12	0.8200	0.283	4.682	0.064	0.055	0.95222
12345.68	0.8100	0.287	4.609	0.062	0.055	0.95015
12500.00	0.8000	0.291	4.537	0.061	0.054	0.94810
12658.23	0.7900	0.293	4.466	0.059	0.053	0.94622
12820.51	0.7800	0.293	4.394	0.057	0.052	0.94446
12987.01	0.7700	0.294	4.320	0.056	0.051	0.94260
13157.89	0.7600	0.296	4.245	0.054	0.051	0.94038
13333.33	0.7500	0.298	4.171	0.053	0.050	0.93795
13513.51	0.7400	0.300	4.097	0.051	0.049	0.93542
13698.63	0.7300	0.302	4.022	0.050	0.048	0.93285
13888.89	0.7200	0.304	3.947	0.048	0.047	0.93017
14084.51	0.7100	0.305	3.872	0.047	0.047	0.92738
14285.71	0.7000	0.306	3.795	0.045	0.046	0.92439
14492.75	0.6900	0.308	3.717	0.044	0.045	0.92110
14705.88	0.6800	0.311	3.638	0.042	0.044	0.91739
14925.37	0.6700	0.314	3.558	0.041	0.043	0.91331
15151.51	0.6600	0.317	3.478	0.039	0.042	0.90890
15384.62	0.6500	0.320	3.396	0.038	0.041	0.90423
15625.00	0.6400	0.323	3.312	0.037	0.040	0.89909
15873.02	0.6300	0.327	3.226	0.035	0.039	0.89311
16129.03	0.6200	0.333	3.137	0.034	0.039	0.88628
16393.44	0.6100	0.339	3.046	0.032	0.038	0.87849
16666.67	0.6000	0.346	2.950	0.031	0.037	0.86932
16949.15	0.5900	0.357	2.848	0.030	0.036	0.85742
17241.38	0.5800	0.377	2.739	0.029	0.034	0.84076
17543.86	0.5700	0.409	2.626	0.027	0.033	0.81706
17857.14	0.5600	0.457	2.516	0.027	0.032	0.78517
18181.82	0.5500	0.519	2.415	0.026	0.032	0.74643
18518.52	0.5400	0.592	2.329	0.026	0.031	0.70443
18867.92	0.5300	0.667	2.262	0.026	0.030	0.66398
19230.77	0.5200	0.738	2.211	0.027	0.030	0.62895
19607.84	0.5100	0.798	2.173	0.027	0.029	0.60084
20000.00	0.5000	0.846	2.140	0.027	0.029	0.57863
20408.16	0.4900	0.883	2.108	0.027	0.028	0.56027
20833.33	0.4800	0.912	2.073	0.026	0.027	0.54369
21276.60	0.4700	0.937	2.033	0.026	0.027	0.52742
21739.13	0.4600	0.959	1.990	0.026	0.026	0.51079
22222.22	0.4500	0.980	1.945	0.025	0.025	0.49355
22727.27	0.4400	1.002	1.897	0.025	0.024	0.47566
23255.81	0.4300	1.024	1.847	0.024	0.024	0.45709
23809.52	0.4200	1.047	1.796	0.024	0.023	0.43790
24390.24	0.4100	1.072	1.745	0.023	0.022	0.41833
25000.00	0.4000	1.098	1.693	0.022	0.021	0.39847
25641.03	0.3900	1.126	1.641	0.022	0.020	0.37829
26315.79	0.3800	1.156	1.587	0.021	0.019	0.35758
27027.03	0.3700	1.193	1.534	0.020	0.018	0.33636
27777.78	0.3600	1.238	1.483	0.020	0.016	0.31576
28571.43	0.3500	1.292	1.443	0.019	0.015	0.29819
29411.76	0.3400	1.350	1.420	0.018	0.015	0.28631
30303.03	0.3300	1.401	1.415	0.018	0.014	0.28103

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.437	1.424	0.018	0.014	0.28101
32258.06	0.3100	1.454	1.438	0.018	0.014	0.28360
33333.33	0.3000	1.453	1.449	0.018	0.014	0.28638
34482.76	0.2900	1.440	1.451	0.018	0.015	0.28771
35714.29	0.2800	1.420	1.442	0.018	0.014	0.28679
37037.04	0.2700	1.400	1.425	0.018	0.014	0.28377
38461.54	0.2600	1.382	1.407	0.018	0.014	0.28027
40000.00	0.2500	1.360	1.394	0.018	0.014	0.27846
41666.67	0.2400	1.321	1.382	0.018	0.014	0.27843
43478.26	0.2300	1.265	1.354	0.018	0.014	0.27601
45454.55	0.2200	1.208	1.301	0.017	0.014	0.26698
47619.05	0.2100	1.163	1.240	0.016	0.013	0.25428

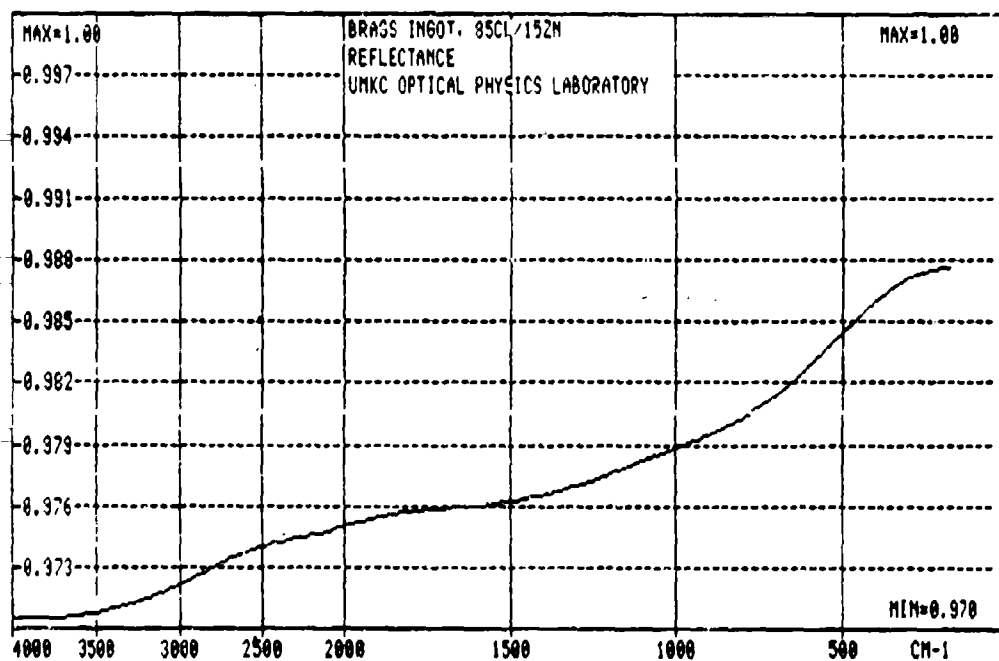


Figure 59. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of brass 85Cu/15Zn.

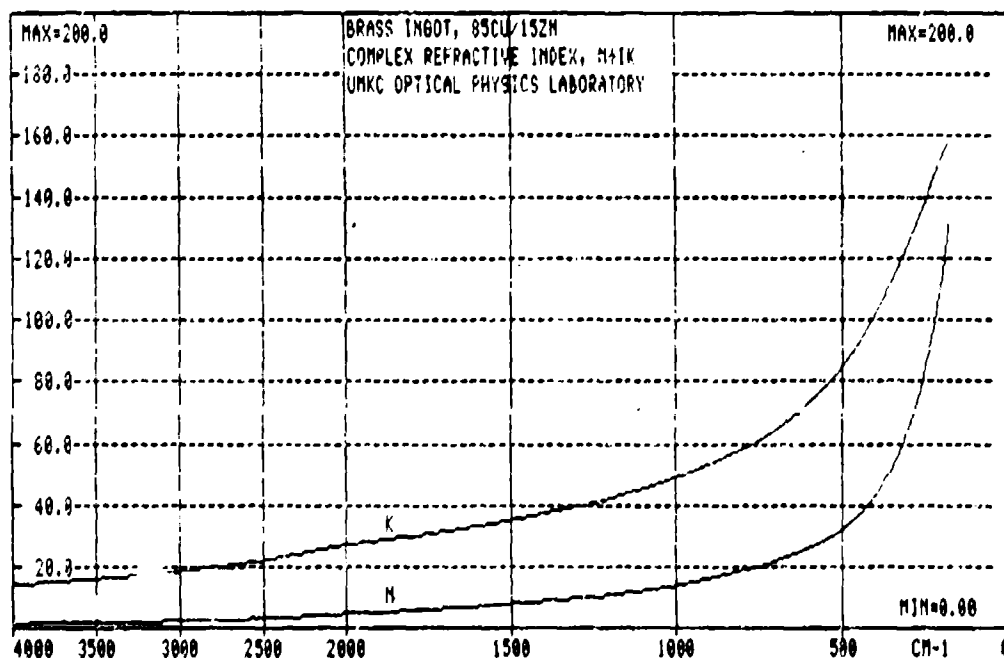


Figure 60. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for brass 85Cu/15Zn.

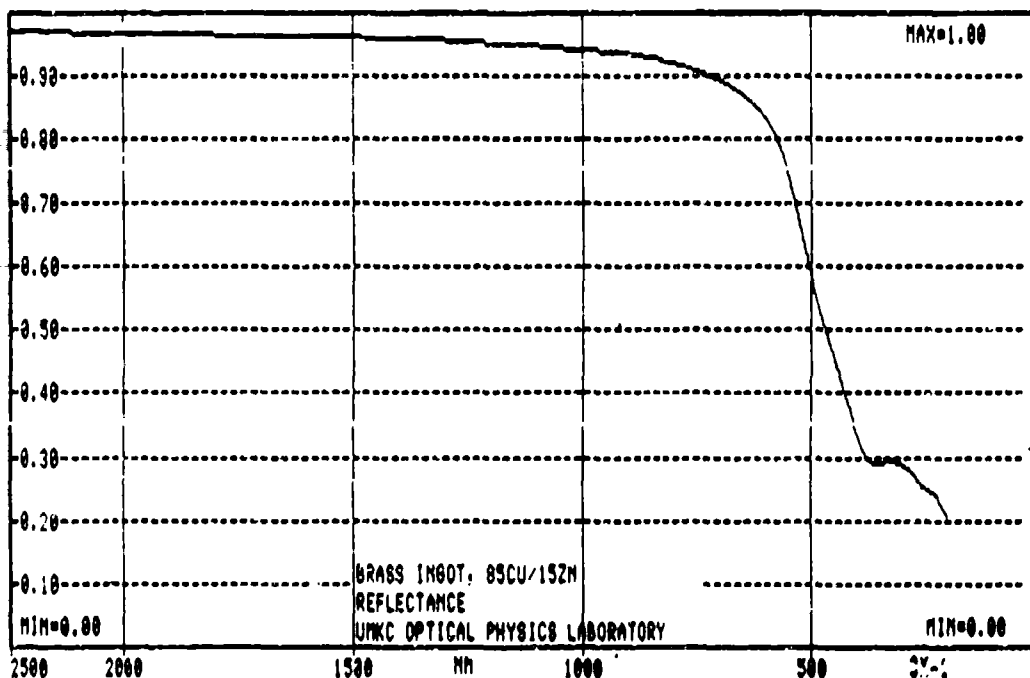


Figure 61. The uv-vis-nir (2,500–200 nm) reflectance spectrum of brass 85Cu/152n.

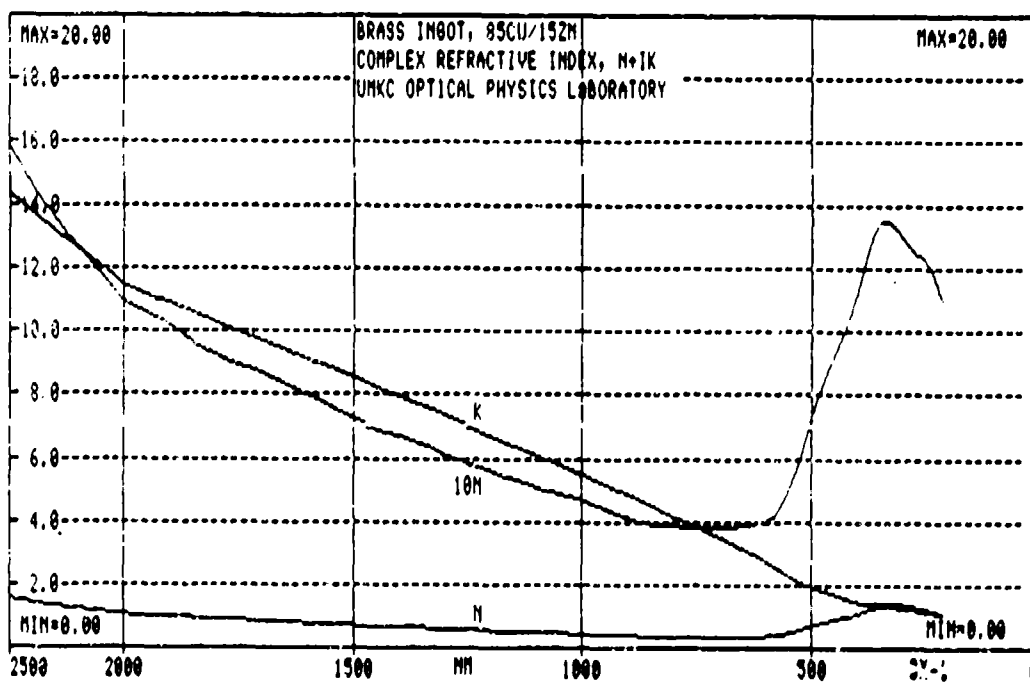


Figure 62. The uv-vis-nir (2,500–210 nm) complex refractive indices  $n$  and  $k$  for brass 85Cu/152n.

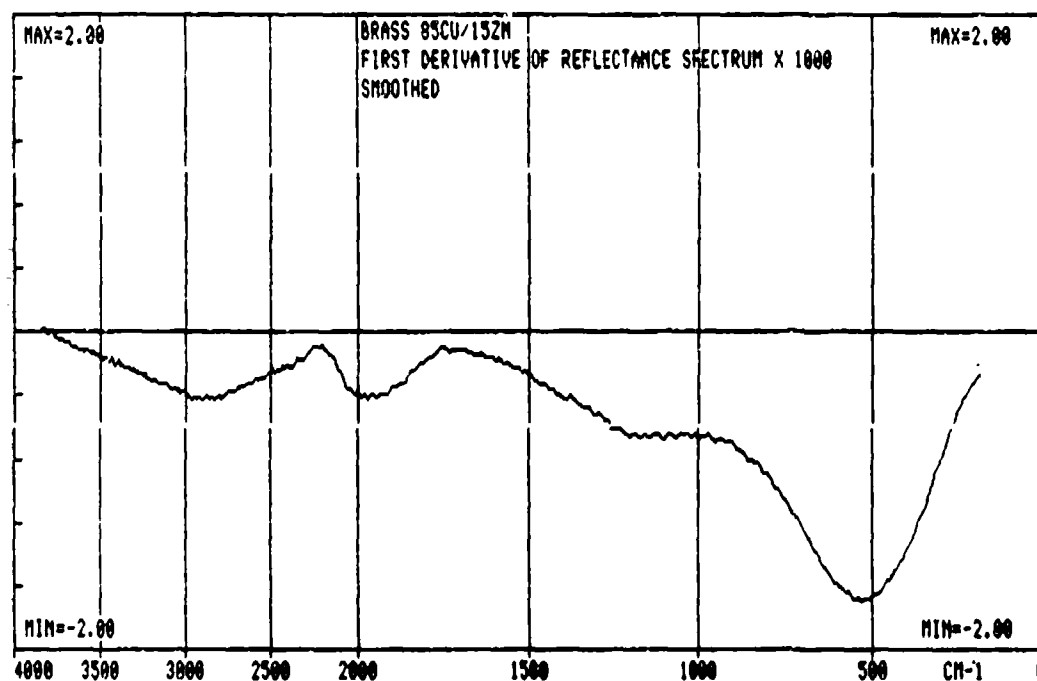


Figure 63. The first derivative of the infrared reflectance spectrum of brass 85Cu/15Zn.

WN	WL	N	K	DN	DK	R
180.00	55.5556	134.394	158.413	19.266	107.401	0.98770
190.00	52.6316	125.846	156.236	23.398	100.565	0.98765
200.00	50.0000	117.988	154.202	26.634	93.156	0.98764
210.00	47.6190	110.660	151.765	28.961	86.082	0.98761
220.00	45.4545	103.886	149.170	30.628	79.522	0.98758
230.00	43.4783	97.658	146.384	31.680	73.444	0.98754
240.00	41.6667	91.950	143.514	32.270	67.878	0.98750
250.00	40.0000	86.720	140.601	32.494	62.795	0.98745
260.00	38.4615	81.894	137.698	32.462	58.151	0.98740
270.00	37.0370	77.440	134.785	32.202	53.896	0.98734
280.00	35.7143	73.328	131.883	31.765	50.003	0.98728
290.00	34.4828	69.557	128.989	31.171	46.455	0.98721
300.00	33.3333	66.089	126.149	30.482	43.227	0.98713
310.00	32.2581	62.917	123.353	29.708	40.297	0.98704
320.00	31.2500	60.007	120.638	28.894	37.640	0.98695
330.00	30.3030	57.334	118.008	28.058	35.229	0.98685
340.00	29.4118	54.853	115.473	27.227	33.028	0.98675
350.00	28.5714	52.551	113.008	26.390	31.011	0.98664
360.00	27.7778	50.415	110.615	25.557	29.163	0.98653
370.00	27.0270	48.455	108.288	24.724	27.479	0.98641
380.00	26.3158	46.628	106.055	23.921	25.935	0.98629
390.00	25.6410	44.947	103.885	23.128	24.523	0.98616
400.00	25.0000	43.376	101.805	22.368	23.225	0.98602
410.00	24.3902	41.933	99.790	21.624	22.039	0.98588
420.00	23.8095	40.568	97.868	20.922	20.940	0.98574
430.00	23.2558	39.302	95.994	20.235	19.926	0.98559
440.00	22.7273	38.125	94.189	19.574	18.991	0.98543
450.00	22.2222	37.051	92.450	18.935	18.139	0.98527
460.00	21.7391	36.042	90.804	18.339	17.353	0.98511
470.00	21.2766	35.079	89.230	17.776	16.618	0.98495
480.00	20.8333	34.160	87.708	17.237	15.928	0.98479
490.00	20.4082	33.297	86.231	16.716	15.284	0.98463
500.00	20.0000	32.491	84.805	16.217	14.685	0.98447
510.00	19.6078	31.732	83.436	15.742	14.128	0.98430
520.00	19.2308	31.013	82.120	15.289	13.607	0.98413
530.00	18.8679	30.330	80.852	14.858	13.118	0.98397
540.00	18.5185	29.682	79.629	14.447	12.659	0.98380
550.00	18.1818	29.066	78.451	14.054	12.227	0.98363
560.00	17.8571	28.480	77.313	13.678	11.821	0.98347
570.00	17.5439	27.922	76.216	13.320	11.438	0.98330
580.00	17.2414	27.392	75.157	12.977	11.077	0.98313
590.00	16.9492	26.888	74.137	12.650	10.738	0.98297
600.00	16.6667	26.404	73.160	12.341	10.418	0.98281
610.00	16.3934	25.935	72.219	12.047	10.112	0.98265
620.00	16.1290	25.476	71.310	11.767	9.820	0.98250
630.00	15.8730	25.037	70.427	11.497	9.542	0.98235
640.00	15.6250	24.610	69.577	11.241	9.277	0.98221
650.00	15.3846	24.193	68.754	10.995	9.022	0.98207
660.00	15.1515	23.783	67.955	10.760	8.777	0.98193
670.00	14.9254	23.386	67.174	10.532	8.541	0.98180

WN	WL	N	K	DN	DK	R
680.00	14.7059	23.004	66.414	10.312	8.317	0.98167
690.00	14.4928	22.630	65.679	10.102	8.101	0.98154
700.00	14.2857	22.270	64.962	9.898	7.894	0.98141
710.00	14.0845	21.917	64.267	9.703	7.696	0.98129
720.00	13.8889	21.577	63.591	9.515	7.506	0.98117
730.00	13.6986	21.239	62.940	9.336	7.322	0.98106
740.00	13.5135	20.905	62.304	9.163	7.143	0.98095
750.00	13.3333	20.574	61.681	8.996	6.969	0.98085
760.00	13.1579	20.250	61.069	8.833	6.800	0.98075
770.00	12.9870	19.934	60.467	8.673	6.637	0.98065
780.00	12.8205	19.628	59.878	8.518	6.480	0.98055
790.00	12.6582	19.332	59.303	8.368	6.330	0.98045
800.00	12.5000	19.042	58.745	8.223	6.184	0.98036
810.00	12.3457	18.755	58.200	8.084	6.043	0.98027
820.00	12.1951	18.470	57.666	7.948	5.905	0.98018
830.00	12.0482	18.191	57.140	7.816	5.771	0.98010
840.00	11.9048	17.920	56.624	7.686	5.642	0.98002
850.00	11.7647	17.652	56.119	7.561	5.516	0.97994
860.00	11.6279	17.390	55.622	7.438	5.394	0.97986
870.00	11.4943	17.129	55.135	7.319	5.275	0.97979
880.00	11.3636	16.879	54.652	7.202	5.160	0.97971
890.00	11.2360	16.632	54.182	7.088	5.048	0.97964
900.00	11.1111	16.390	53.719	6.977	4.940	0.97957
910.00	10.9890	16.151	53.265	6.869	4.834	0.97950
920.00	10.8696	15.916	52.817	6.763	4.731	0.97943
930.00	10.7527	15.686	52.375	6.659	4.631	0.97937
940.00	10.6383	15.461	51.940	6.557	4.534	0.97930
950.00	10.5263	15.242	51.511	6.457	4.440	0.97923
960.00	10.4167	15.029	51.090	6.360	4.349	0.97917
970.00	10.3093	14.816	50.678	6.266	4.260	0.97911
980.00	10.2041	14.608	50.269	6.172	4.173	0.97904
990.00	10.1010	14.403	49.865	6.081	4.089	0.97898
1000.00	10.0000	14.205	49.464	5.990	4.007	0.97892
1010.00	9.9010	14.013	49.071	5.902	3.928	0.97885
1020.00	9.8039	13.826	48.685	5.816	3.851	0.97878
1030.00	9.7087	13.643	48.304	5.731	3.777	0.97872
1040.00	9.6154	13.464	47.930	5.649	3.704	0.97865
1050.00	9.5238	13.290	47.562	5.568	3.634	0.97858
1060.00	9.4340	13.120	47.200	5.489	3.566	0.97852
1070.00	9.3458	12.951	46.846	5.412	3.500	0.97846
1080.00	9.2593	12.784	46.495	5.337	3.435	0.97839
1090.00	9.1743	12.621	46.148	5.263	3.372	0.97833
1100.00	9.0909	12.464	45.806	5.190	3.311	0.97827
1110.00	9.0090	12.309	45.471	5.119	3.251	0.97821
1120.00	8.9286	12.156	45.140	5.049	3.193	0.97814
1130.00	8.8496	12.006	44.812	4.980	3.136	0.97808
1140.00	8.7719	11.862	44.487	4.913	3.081	0.97802
1150.00	8.6957	11.721	44.169	4.847	3.028	0.97795
1160.00	8.6207	11.584	43.856	4.782	2.976	0.97788
1170.00	8.5470	11.450	43.549	4.719	2.926	0.97782

WN	WL	N	K	DN	DK	R
1180.00	8.4746	11.317	43.248	4.658	2.877	0.97776
1190.00	8.4034	11.186	42.949	4.598	2.829	0.97769
1200.00	8.3333	11.057	42.655	4.538	2.782	0.97763
1210.00	8.2645	10.933	42.364	4.480	2.737	0.97757
1220.00	8.1967	10.811	42.079	4.423	2.693	0.97751
1230.00	8.1301	10.690	41.798	4.368	2.649	0.97744
1240.00	8.0645	10.572	41.520	4.313	2.607	0.97738
1250.00	8.0000	10.459	41.247	4.259	2.567	0.97732
1260.00	7.9365	10.347	40.980	4.207	2.527	0.97726
1270.00	7.8740	10.235	40.719	4.157	2.488	0.97720
1280.00	7.8125	10.123	40.461	4.107	2.450	0.97715
1290.00	7.7519	10.012	40.205	4.058	2.412	0.97710
1300.00	7.6923	9.903	39.952	4.010	2.375	0.97705
1310.00	7.6336	9.796	39.701	3.963	2.339	0.97700
1320.00	7.5758	9.690	39.454	3.916	2.303	0.97695
1330.00	7.5188	9.587	39.210	3.870	2.269	0.97690
1340.00	7.4627	9.486	38.969	3.825	2.235	0.97685
1350.00	7.4074	9.386	38.732	3.781	2.202	0.97680
1360.00	7.3529	9.289	38.499	3.738	2.170	0.97675
1370.00	7.2993	9.193	38.270	3.696	2.139	0.97671
1380.00	7.2464	9.096	38.045	3.655	2.108	0.97667
1390.00	7.1942	8.997	37.821	3.615	2.077	0.97663
1400.00	7.1429	8.901	37.597	3.574	2.047	0.97659
1410.00	7.0922	8.809	37.375	3.534	2.017	0.97655
1420.00	7.0423	8.720	37.158	3.495	1.989	0.97651
1430.00	6.9930	8.631	36.945	3.457	1.961	0.97647
1440.00	6.9444	8.541	36.735	3.420	1.934	0.97643
1450.00	6.8966	8.453	36.526	3.384	1.906	0.97640
1460.00	6.8493	8.366	36.320	3.347	1.880	0.97637
1470.00	6.8027	8.278	36.117	3.312	1.854	0.97634
1480.00	6.7568	8.192	35.915	3.277	1.828	0.97631
1490.00	6.7114	8.106	35.715	3.242	1.802	0.97628
1500.00	6.6667	8.024	35.516	3.208	1.778	0.97625
1510.00	6.6225	7.942	35.322	3.175	1.754	0.97622
1520.00	6.5789	7.860	35.130	3.142	1.730	0.97620
1530.00	6.5359	7.777	34.939	3.110	1.706	0.97618
1540.00	6.4935	7.696	34.748	3.078	1.682	0.97616
1550.00	6.4516	7.616	34.559	3.046	1.660	0.97614
1560.00	6.4103	7.539	34.372	3.015	1.637	0.97611
1570.00	6.3694	7.463	34.189	2.984	1.616	0.97609
1580.00	6.3291	7.388	34.008	2.954	1.594	0.97607
1590.00	6.2893	7.310	33.829	2.925	1.573	0.97606
1600.00	6.2500	7.234	33.651	2.895	1.552	0.97604
1610.00	6.2112	7.157	33.472	2.866	1.531	0.97603
1620.00	6.1728	7.085	33.293	2.837	1.511	0.97601
1630.00	6.1350	7.014	33.118	2.809	1.491	0.97599
1640.00	6.0976	6.945	32.946	2.781	1.472	0.97597
1650.00	6.0606	6.875	32.777	2.754	1.453	0.97596
1660.00	6.0241	6.803	32.609	2.727	1.434	0.97595
1670.00	5.9880	6.731	32.441	2.700	1.415	0.97594



WN	WL	N	K	DN	DK	R
1680.00	5.9524	6.662	32.272	2.673	1.396	0.97593
1690.00	5.9172	6.595	32.105	2.647	1.378	0.97592
1700.00	5.8824	6.529	31.940	2.621	1.361	0.97590
1710.00	5.8480	6.465	31.776	2.595	1.344	0.97588
1720.00	5.8140	6.402	31.615	2.570	1.327	0.97587
1730.00	5.7803	6.338	31.456	2.546	1.310	0.97586
1740.00	5.7471	6.273	31.298	2.521	1.294	0.97585
1750.00	5.7143	6.209	31.140	2.497	1.277	0.97584
1760.00	5.6818	6.147	30.982	2.473	1.261	0.97583
1770.00	5.6497	6.087	30.825	2.449	1.246	0.97582
1780.00	5.6180	6.027	30.671	2.425	1.230	0.97581
1790.00	5.5866	5.967	30.517	2.402	1.215	0.97579
1800.00	5.5556	5.908	30.363	2.379	1.200	0.97578
1810.00	5.5249	5.852	30.209	2.356	1.185	0.97576
1820.00	5.4945	5.796	30.057	2.333	1.171	0.97574
1830.00	5.4645	5.744	29.906	2.310	1.157	0.97571
1840.00	5.4346	5.690	29.758	2.288	1.144	0.97569
1850.00	5.4054	5.639	29.610	2.266	1.130	0.97566
1860.00	5.3763	5.588	29.462	2.245	1.117	0.97563
1870.00	5.3476	5.540	29.316	2.223	1.105	0.97559
1880.00	5.3191	5.493	29.172	2.202	1.092	0.97556
1890.00	5.2910	5.448	29.031	2.182	1.081	0.97552
1900.00	5.2632	5.401	28.891	2.161	1.069	0.97548
1910.00	5.2356	5.357	28.752	2.141	1.057	0.97544
1920.00	5.2083	5.313	28.615	2.122	1.046	0.97541
1930.00	5.1813	5.271	28.480	2.102	1.035	0.97537
1940.00	5.1546	5.227	28.346	2.083	1.024	0.97533
1950.00	5.1282	5.185	28.212	2.064	1.013	0.97529
1960.00	5.1020	5.145	28.080	2.046	1.003	0.97525
1970.00	5.0761	5.106	27.950	2.027	0.993	0.97521
1980.00	5.0505	5.066	27.822	2.009	0.983	0.97517
1990.00	5.0251	5.026	27.696	1.992	0.973	0.97513
2000.00	5.0000	4.987	27.569	1.974	0.963	0.97509
2010.00	4.9751	4.950	27.444	1.957	0.953	0.97505
2020.00	4.9505	4.914	27.321	1.940	0.944	0.97501
2030.00	4.9261	4.878	27.201	1.923	0.935	0.97497
2040.00	4.9020	4.841	27.081	1.907	0.926	0.97493
2050.00	4.8780	4.804	26.963	1.891	0.917	0.97490
2060.00	4.8544	4.768	26.845	1.875	0.908	0.97487
2070.00	4.8309	4.732	26.729	1.859	0.899	0.97483
2080.00	4.8077	4.696	26.614	1.844	0.891	0.97480
2090.00	4.7847	4.662	26.500	1.829	0.882	0.97477
2100.00	4.7619	4.627	26.388	1.814	0.874	0.97474
2110.00	4.7393	4.592	26.277	1.799	0.866	0.97471
2120.00	4.7170	4.557	26.167	1.784	0.858	0.97469
2130.00	4.6948	4.522	26.058	1.770	0.850	0.97467
2140.00	4.6729	4.487	25.950	1.756	0.841	0.97465
2150.00	4.6512	4.452	25.843	1.742	0.833	0.97463
2160.00	4.6296	4.417	25.736	1.728	0.826	0.97462
2170.00	4.6083	4.382	25.631	1.714	0.818	0.97461

WN	WL	N	K	DN	DK	R
2180.00	4.5872	4.347	25.526	1.701	0.810	0.97460
2190.00	4.5662	4.310	25.422	1.687	0.802	0.97460
2200.00	4.5455	4.275	25.317	1.674	0.794	0.97459
2210.00	4.5249	4.240	25.211	1.660	0.787	0.97458
2220.00	4.5045	4.207	25.107	1.647	0.779	0.97457
2230.00	4.4843	4.174	25.005	1.634	0.772	0.97456
2240.00	4.4643	4.140	24.903	1.621	0.765	0.97455
2250.00	4.4444	4.106	24.801	1.608	0.757	0.97454
2260.00	4.4248	4.074	24.699	1.595	0.750	0.97453
2270.00	4.4053	4.042	24.598	1.583	0.743	0.97452
2280.00	4.3860	4.011	24.497	1.570	0.736	0.97450
2290.00	4.3668	3.981	24.398	1.558	0.730	0.97448
2300.00	4.3478	3.951	24.299	1.546	0.723	0.97447
2310.00	4.3290	3.921	24.201	1.534	0.717	0.97445
2320.00	4.3103	3.891	24.104	1.522	0.710	0.97443
2330.00	4.2918	3.862	24.007	1.510	0.704	0.97442
2340.00	4.2735	3.833	23.911	1.498	0.698	0.97440
2350.00	4.2553	3.804	23.815	1.486	0.691	0.97438
2360.00	4.2373	3.777	23.720	1.475	0.685	0.97436
2370.00	4.2194	3.749	23.625	1.463	0.679	0.97434
2380.00	4.2017	3.723	23.532	1.452	0.674	0.97431
2390.00	4.1841	3.697	23.440	1.441	0.668	0.97429
2400.00	4.1667	3.671	23.348	1.430	0.662	0.97427
2410.00	4.1494	3.644	23.258	1.419	0.657	0.97425
2420.00	4.1322	3.618	23.167	1.409	0.651	0.97423
2430.00	4.1152	3.592	23.076	1.398	0.646	0.97421
2440.00	4.0984	3.567	22.986	1.387	0.640	0.97419
2450.00	4.0816	3.542	22.897	1.377	0.635	0.97416
2460.00	4.0650	3.518	22.808	1.367	0.630	0.97413
2470.00	4.0486	3.496	22.721	1.356	0.625	0.97410
2480.00	4.0323	3.473	22.634	1.346	0.620	0.97407
2490.00	4.0161	3.449	22.549	1.336	0.615	0.97405
2500.00	4.0000	3.425	22.464	1.327	0.610	0.97403
2510.00	3.9841	3.401	22.378	1.317	0.605	0.97401
2520.00	3.9683	3.379	22.293	1.307	0.600	0.97398
2530.00	3.9526	3.357	22.209	1.297	0.595	0.97395
2540.00	3.9370	3.336	22.125	1.288	0.591	0.97392
2550.00	3.9216	3.314	22.043	1.279	0.586	0.97389
2560.00	3.9063	3.293	21.961	1.269	0.582	0.97386
2570.00	3.8911	3.272	21.879	1.260	0.577	0.97383
2580.00	3.8760	3.251	21.798	1.251	0.573	0.97380
2590.00	3.8610	3.231	21.717	1.242	0.569	0.97377
2600.00	3.8462	3.211	21.638	1.233	0.564	0.97373
2610.00	3.8314	3.192	21.559	1.224	0.560	0.97370
2620.00	3.8168	3.172	21.480	1.216	0.556	0.97367
2630.00	3.8023	3.153	21.402	1.207	0.552	0.97363
2640.00	3.7879	3.134	21.325	1.199	0.548	0.97360
2650.00	3.7736	3.115	21.248	1.190	0.544	0.97357
2660.00	3.7594	3.097	21.172	1.182	0.540	0.97353
2670.00	3.7453	3.078	21.096	1.174	0.536	0.97350

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.060	21.021	1.166	0.532	0.97347
2690.00	3.7175	3.042	20.946	1.158	0.529	0.97343
2700.00	3.7037	3.024	20.871	1.149	0.525	0.97339
2710.00	3.6900	3.007	20.797	1.142	0.521	0.97336
2720.00	3.6765	2.990	20.724	1.134	0.518	0.97332
2730.00	3.6630	2.973	20.652	1.126	0.514	0.97328
2740.00	3.6496	2.956	20.579	1.118	0.510	0.97324
2750.00	3.6364	2.940	20.507	1.111	0.507	0.97320
2760.00	3.6232	2.925	20.436	1.103	0.504	0.97316
2770.00	3.6101	2.909	20.366	1.096	0.500	0.97312
2780.00	3.5971	2.892	20.296	1.089	0.497	0.97308
2790.00	3.5842	2.876	20.226	1.081	0.494	0.97304
2800.00	3.5714	2.861	20.157	1.074	0.490	0.97300
2810.00	3.5587	2.847	20.088	1.067	0.487	0.97295
2820.00	3.5461	2.833	20.021	1.060	0.484	0.97291
2830.00	3.5336	2.818	19.954	1.053	0.481	0.97287
2840.00	3.5211	2.802	19.888	1.046	0.478	0.97283
2850.00	3.5088	2.787	19.821	1.039	0.475	0.97279
2860.00	3.4965	2.773	19.754	1.033	0.472	0.97275
2870.00	3.4843	2.760	19.689	1.026	0.469	0.97270
2880.00	3.4722	2.746	19.624	1.019	0.466	0.97266
2890.00	3.4602	2.732	19.561	1.013	0.463	0.97262
2900.00	3.4483	2.717	19.497	1.007	0.460	0.97258
2910.00	3.4364	2.703	19.433	1.000	0.458	0.97254
2920.00	3.4247	2.690	19.369	0.994	0.455	0.97250
2930.00	3.4130	2.677	19.306	0.988	0.452	0.97245
2940.00	3.4014	2.665	19.245	0.981	0.449	0.97241
2950.00	3.3898	2.651	19.184	0.975	0.447	0.97237
2960.00	3.3784	2.638	19.123	0.969	0.444	0.97233
2970.00	3.3670	2.624	19.062	0.963	0.441	0.97229
2980.00	3.3557	2.612	19.001	0.957	0.439	0.97225
2990.00	3.3445	2.600	18.941	0.951	0.436	0.97220
3000.00	3.3333	2.588	18.882	0.946	0.434	0.97216
3010.00	3.3223	2.575	18.823	0.940	0.431	0.97212
3020.00	3.3113	2.562	18.765	0.934	0.429	0.97208
3030.00	3.3003	2.550	18.707	0.929	0.426	0.97204
3040.00	3.2895	2.538	18.649	0.923	0.424	0.97201
3050.00	3.2787	2.526	18.592	0.918	0.421	0.97197
3060.00	3.2680	2.513	18.535	0.912	0.419	0.97193
3070.00	3.2573	2.501	18.479	0.907	0.416	0.97190
3080.00	3.2468	2.489	18.423	0.901	0.414	0.97187
3090.00	3.2362	2.476	18.367	0.896	0.412	0.97183
3100.00	3.2258	2.464	18.312	0.891	0.409	0.97180
3110.00	3.2154	2.452	18.256	0.885	0.407	0.97177
3120.00	3.2051	2.440	18.201	0.880	0.405	0.97173
3130.00	3.1949	2.429	18.146	0.875	0.402	0.97169
3140.00	3.1847	2.418	18.092	0.870	0.400	0.97166
3150.00	3.1746	2.407	18.039	0.865	0.398	0.97162
3160.00	3.1646	2.395	17.986	0.860	0.396	0.97159
3170.00	3.1546	2.383	17.933	0.855	0.394	0.97156

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.371	17.881	0.850	0.391	0.97153
3190.00	3.1348	2.360	17.828	0.845	0.389	0.97150
3200.00	3.1250	2.349	17.776	0.841	0.387	0.97147
3210.00	3.1153	2.338	17.725	0.836	0.385	0.97144
3220.00	3.1056	2.326	17.674	0.831	0.383	0.97141
3230.00	3.0960	2.315	17.623	0.827	0.381	0.97139
3240.00	3.0864	2.303	17.572	0.822	0.379	0.97136
3250.00	3.0769	2.292	17.521	0.817	0.377	0.97133
3260.00	3.0675	2.282	17.471	0.813	0.375	0.97130
3270.00	3.0581	2.271	17.421	0.808	0.373	0.97127
3280.00	3.0488	2.260	17.372	0.804	0.371	0.97125
3290.00	3.0395	2.249	17.322	0.799	0.369	0.97123
3300.00	3.0303	2.238	17.273	0.795	0.367	0.97120
3310.00	3.0211	2.227	17.224	0.790	0.365	0.97117
3320.00	3.0120	2.217	17.176	0.786	0.363	0.97115
3330.00	3.0030	2.205	17.128	0.782	0.361	0.97113
3340.00	2.9940	2.195	17.080	0.778	0.359	0.97111
3350.00	2.9851	2.184	17.032	0.773	0.357	0.97109
3360.00	2.9762	2.174	16.985	0.769	0.355	0.97106
3370.00	2.9674	2.163	16.938	0.765	0.353	0.97104
3380.00	2.9586	2.153	16.891	0.761	0.351	0.97102
3390.00	2.9499	2.142	16.845	0.757	0.350	0.97100
3400.00	2.9412	2.132	16.798	0.753	0.348	0.97098
3410.00	2.9326	2.121	16.752	0.749	0.346	0.97096
3420.00	2.9240	2.111	16.706	0.745	0.344	0.97094
3430.00	2.9155	2.101	16.660	0.741	0.342	0.97092
3440.00	2.9070	2.091	16.615	0.737	0.341	0.97090
3450.00	2.8986	2.081	16.570	0.733	0.339	0.97088
3460.00	2.8902	2.071	16.525	0.729	0.337	0.97087
3470.00	2.8818	2.061	16.480	0.725	0.335	0.97085
3480.00	2.8736	2.051	16.436	0.721	0.334	0.97083
3490.00	2.8653	2.041	16.391	0.717	0.332	0.97082
3500.00	2.8571	2.031	16.347	0.714	0.330	0.97080
3510.00	2.8490	2.021	16.304	0.710	0.329	0.97078
3520.00	2.8409	2.011	16.260	0.706	0.327	0.97077
3530.00	2.8329	2.001	16.217	0.703	0.325	0.97076
3540.00	2.8249	1.991	16.174	0.699	0.324	0.97074
3550.00	2.8169	1.981	16.131	0.695	0.322	0.97073
3560.00	2.8090	1.972	16.088	0.692	0.320	0.97072
3570.00	2.8011	1.963	16.045	0.688	0.319	0.97070
3580.00	2.7933	1.953	16.003	0.685	0.317	0.97068
3590.00	2.7855	1.944	15.961	0.681	0.316	0.97067
3600.00	2.7778	1.935	15.920	0.678	0.314	0.97066
3610.00	2.7701	1.925	15.879	0.674	0.312	0.97065
3620.00	2.7624	1.915	15.837	0.671	0.311	0.97065
3630.00	2.7548	1.905	15.796	0.667	0.309	0.97064
3640.00	2.7473	1.896	15.754	0.664	0.308	0.97063
3650.00	2.7397	1.887	15.713	0.660	0.306	0.97062
3660.00	2.7322	1.878	15.673	0.657	0.305	0.97061
3670.00	2.7248	1.868	15.632	0.654	0.303	0.97060

WN	WL	N	K	DN	DK	R
3680.00	2.7174	1.859	15.592	0.650	0.302	0.97059
3690.00	2.7100	1.850	15.552	0.647	0.300	0.97058
3700.00	2.7027	1.842	15.512	0.644	0.299	0.97057
3710.00	2.6954	1.833	15.472	0.641	0.297	0.97056
3720.00	2.6882	1.824	15.433	0.638	0.296	0.97055
3730.00	2.6810	1.815	15.394	0.634	0.295	0.97055
3740.00	2.6738	1.805	15.355	0.631	0.293	0.97055
3750.00	2.6667	1.796	15.316	0.628	0.292	0.97055
3760.00	2.6596	1.787	15.277	0.625	0.290	0.97055
3770.00	2.6525	1.778	15.239	0.622	0.289	0.97055
3780.00	2.6455	1.769	15.200	0.619	0.287	0.97055
3790.00	2.6385	1.760	15.162	0.616	0.286	0.97055
3800.00	2.6316	1.751	15.123	0.613	0.285	0.97055
3810.00	2.6247	1.742	15.085	0.610	0.283	0.97055
3820.00	2.6178	1.733	15.047	0.607	0.282	0.97055
3830.00	2.6110	1.724	15.009	0.604	0.280	0.97055
3840.00	2.6042	1.715	14.971	0.601	0.279	0.97055
3850.00	2.5974	1.707	14.933	0.598	0.278	0.97055
3860.00	2.5907	1.698	14.896	0.595	0.276	0.97055
3870.00	2.5840	1.689	14.859	0.592	0.275	0.97055
3880.00	2.5773	1.681	14.821	0.589	0.274	0.97055
3890.00	2.5707	1.672	14.784	0.586	0.272	0.97055
3900.00	2.5641	1.664	14.747	0.583	0.271	0.97055
3910.00	2.5575	1.656	14.710	0.580	0.270	0.97055
3920.00	2.5510	1.647	14.673	0.577	0.269	0.97055
3930.00	2.5445	1.639	14.637	0.575	0.267	0.97055
3940.00	2.5381	1.631	14.600	0.572	0.266	0.97055
3950.00	2.5316	1.623	14.564	0.569	0.265	0.97055
3960.00	2.5253	1.614	14.527	0.566	0.264	0.97055
3970.00	2.5189	1.606	14.491	0.563	0.262	0.97055
3980.00	2.5126	1.598	14.455	0.561	0.261	0.97055
3990.00	2.5063	1.590	14.418	0.558	0.260	0.97054
4000.00	2.5000	1.583	14.381	0.555	0.259	0.97053
4016.06	2.4900	1.572	14.325	0.551	0.257	0.97050
4032.26	2.4800	1.562	14.267	0.546	0.255	0.97045
4048.58	2.4700	1.550	14.212	0.542	0.253	0.97045
4065.04	2.4600	1.538	14.155	0.538	0.251	0.97045
4081.63	2.4500	1.525	14.098	0.534	0.250	0.97045
4098.36	2.4400	1.513	14.041	0.529	0.248	0.97045
4115.23	2.4300	1.500	13.981	0.525	0.246	0.97044
4132.23	2.4200	1.490	13.925	0.521	0.244	0.97040
4149.38	2.4100	1.478	13.868	0.517	0.242	0.97040
4166.67	2.4000	1.465	13.809	0.512	0.240	0.97040
4184.10	2.3900	1.455	13.750	0.508	0.239	0.97035
4201.68	2.3800	1.445	13.691	0.504	0.237	0.97030
4219.41	2.3700	1.434	13.632	0.500	0.235	0.97028
4237.29	2.3600	1.424	13.574	0.496	0.234	0.97023
4255.32	2.3500	1.414	13.518	0.491	0.232	0.97020
4273.50	2.3400	1.404	13.460	0.487	0.230	0.97015
4291.85	2.3300	1.394	13.401	0.483	0.229	0.97011

WN	WL	N	K	DN	DK	R
4310.35	2.3200	1.384	13.343	0.479	0.227	0.97006
4329.00	2.3100	1.373	13.286	0.475	0.225	0.97005
4347.83	2.3000	1.363	13.227	0.471	0.224	0.97000
4366.81	2.2900	1.353	13.170	0.467	0.222	0.96995
4385.96	2.2800	1.343	13.111	0.463	0.220	0.96990
4405.29	2.2700	1.334	13.053	0.459	0.219	0.96985
4424.78	2.2600	1.324	12.996	0.455	0.217	0.96980
4444.44	2.2500	1.315	12.937	0.451	0.216	0.96975
4464.29	2.2400	1.305	12.879	0.447	0.214	0.96970
4484.30	2.2300	1.295	12.821	0.443	0.212	0.96965
4504.50	2.2200	1.286	12.763	0.439	0.211	0.96960
4524.89	2.2100	1.276	12.705	0.435	0.209	0.96955
4545.45	2.2000	1.267	12.646	0.431	0.208	0.96949
4566.21	2.1900	1.258	12.587	0.428	0.206	0.96943
4587.16	2.1800	1.250	12.530	0.424	0.205	0.96935
4608.29	2.1700	1.241	12.471	0.420	0.203	0.96928
4629.63	2.1600	1.232	12.413	0.416	0.202	0.96921
4651.16	2.1500	1.223	12.355	0.412	0.200	0.96915
4672.90	2.1400	1.215	12.297	0.409	0.199	0.96907
4694.84	2.1300	1.206	12.240	0.405	0.197	0.96900
4716.98	2.1200	1.197	12.182	0.401	0.196	0.96895
4739.34	2.1100	1.189	12.123	0.397	0.195	0.96886
4761.90	2.1000	1.180	12.065	0.394	0.193	0.96879
4784.69	2.0900	1.172	12.007	0.390	0.192	0.96872
4807.69	2.0800	1.163	11.950	0.386	0.190	0.96865
4830.92	2.0700	1.154	11.892	0.383	0.189	0.96859
4854.37	2.0600	1.146	11.834	0.379	0.187	0.96850
4878.05	2.0500	1.137	11.776	0.375	0.186	0.96844
4901.96	2.0400	1.129	11.718	0.372	0.185	0.96837
4926.11	2.0300	1.120	11.660	0.368	0.183	0.96830
4950.50	2.0200	1.111	11.602	0.365	0.182	0.96824
4975.12	2.0100	1.103	11.543	0.361	0.180	0.96816
5000.00	2.0000	1.094	11.484	0.358	0.179	0.96809
5025.13	1.9900	1.087	11.425	0.354	0.177	0.96798
5050.50	1.9800	1.080	11.366	0.350	0.176	0.96785
5076.14	1.9700	1.073	11.308	0.347	0.175	0.96774
5102.04	1.9600	1.066	11.250	0.344	0.174	0.96762
5128.20	1.9500	1.059	11.193	0.340	0.172	0.96750
5154.64	1.9400	1.052	11.135	0.337	0.171	0.96738
5181.35	1.9300	1.046	11.078	0.334	0.170	0.96725
5208.33	1.9200	1.039	11.021	0.330	0.169	0.96712
5235.60	1.9100	1.032	10.967	0.327	0.167	0.96702
5263.16	1.9000	1.021	10.914	0.324	0.166	0.96705
5291.00	1.8900	1.011	10.857	0.321	0.165	0.96705
5319.15	1.8800	0.999	10.798	0.317	0.163	0.96708
5347.59	1.8700	0.989	10.741	0.314	0.162	0.96705
5376.34	1.8600	0.978	10.682	0.311	0.160	0.96705
5405.40	1.8500	0.968	10.622	0.307	0.159	0.96705
5434.78	1.8400	0.956	10.561	0.304	0.157	0.96705
5464.48	1.8300	0.948	10.499	0.300	0.156	0.96696

WN	WL	N	K	DN	DK	R
5494.50	1.8200	0.940	10.437	0.297	0.155	0.96683
5524.86	1.8100	0.935	10.375	0.293	0.154	0.96664
5555.56	1.8000	0.930	10.316	0.290	0.152	0.96645
5586.59	1.7900	0.923	10.258	0.287	0.151	0.96631
5617.98	1.7800	0.916	10.199	0.284	0.150	0.96619
5649.72	1.7700	0.908	10.140	0.281	0.149	0.96608
5681.82	1.7600	0.901	10.080	0.278	0.147	0.96596
5714.29	1.7500	0.895	10.019	0.274	0.146	0.96579
5747.13	1.7400	0.890	9.959	0.271	0.145	0.96559
5780.35	1.7300	0.885	9.899	0.268	0.144	0.96536
5813.95	1.7200	0.881	9.841	0.265	0.143	0.96514
5847.95	1.7100	0.875	9.784	0.262	0.142	0.96494
5882.35	1.7000	0.870	9.727	0.259	0.141	0.96477
5917.14	1.6900	0.863	9.670	0.256	0.140	0.96462
5952.38	1.6800	0.856	9.613	0.253	0.139	0.96449
5988.02	1.6700	0.849	9.555	0.250	0.137	0.96438
6024.10	1.6600	0.842	9.497	0.248	0.136	0.96426
6060.61	1.6500	0.834	9.438	0.245	0.135	0.96413
6097.56	1.6400	0.828	9.380	0.242	0.134	0.96397
6134.97	1.6300	0.822	9.322	0.239	0.133	0.96380
6172.84	1.6200	0.815	9.264	0.236	0.132	0.96366
6211.18	1.6100	0.807	9.207	0.233	0.130	0.96355
6250.00	1.6000	0.799	9.148	0.230	0.129	0.96345
6289.31	1.5900	0.792	9.089	0.227	0.128	0.96333
6329.11	1.5800	0.785	9.031	0.225	0.127	0.96319
6369.43	1.5700	0.778	8.972	0.222	0.126	0.96306
6410.26	1.5600	0.770	8.914	0.219	0.125	0.96296
6451.61	1.5500	0.761	8.855	0.216	0.124	0.96288
6493.51	1.5400	0.753	8.795	0.213	0.122	0.96278
6535.95	1.5300	0.745	8.734	0.211	0.121	0.96266
6578.95	1.5200	0.738	8.673	0.208	0.120	0.96250
6622.52	1.5100	0.732	8.612	0.205	0.119	0.96231
6666.67	1.5000	0.726	8.552	0.202	0.118	0.96210
6711.41	1.4900	0.720	8.492	0.199	0.117	0.96188
6756.76	1.4800	0.714	8.431	0.197	0.116	0.96165
6802.72	1.4700	0.708	8.371	0.194	0.115	0.96144
6849.31	1.4600	0.702	8.311	0.191	0.114	0.96124
6896.55	1.4500	0.696	8.250	0.189	0.112	0.96100
6944.44	1.4400	0.691	8.188	0.186	0.111	0.96071
6993.01	1.4300	0.687	8.127	0.183	0.110	0.96036
7042.25	1.4200	0.684	8.067	0.181	0.110	0.95997
7092.20	1.4100	0.681	8.008	0.178	0.109	0.95958
7142.86	1.4000	0.677	7.950	0.176	0.108	0.95924
7194.25	1.3900	0.673	7.891	0.174	0.107	0.95892
7246.38	1.3800	0.668	7.833	0.171	0.106	0.95864
7299.27	1.3700	0.662	7.775	0.169	0.105	0.95835
7352.94	1.3600	0.657	7.717	0.166	0.104	0.95806
7407.41	1.3500	0.652	7.658	0.164	0.103	0.95775
7462.69	1.3400	0.647	7.600	0.162	0.102	0.95747
7518.80	1.3300	0.641	7.543	0.159	0.101	0.95727

WN	WL	N	K	DN	DK	R
7575.76	1.3200	0.633	7.485	0.157	0.100	0.95712
7633.59	1.3100	0.625	7.426	0.155	0.099	0.95702
7692.31	1.3000	0.617	7.365	0.152	0.098	0.95685
7751.94	1.2900	0.611	7.303	0.150	0.097	0.95658
7812.50	1.2800	0.606	7.242	0.147	0.096	0.95622
7874.02	1.2700	0.601	7.182	0.145	0.095	0.95586
7936.51	1.2600	0.596	7.122	0.143	0.094	0.95555
8000.00	1.2500	0.589	7.062	0.141	0.093	0.95529
8064.52	1.2400	0.584	7.001	0.138	0.092	0.95498
8130.08	1.2300	0.578	6.939	0.136	0.091	0.95460
8196.72	1.2200	0.575	6.878	0.134	0.090	0.95410
8264.46	1.2100	0.572	6.818	0.132	0.089	0.95361
8333.33	1.2000	0.567	6.760	0.130	0.088	0.95322
8403.36	1.1900	0.560	6.700	0.127	0.087	0.95296
8474.58	1.1800	0.553	6.639	0.125	0.086	0.95270
8547.01	1.1700	0.548	6.578	0.123	0.085	0.95233
8620.69	1.1600	0.544	6.515	0.121	0.084	0.95181
8695.65	1.1500	0.540	6.454	0.119	0.083	0.95126
8771.93	1.1400	0.536	6.395	0.117	0.082	0.95079
8849.56	1.1300	0.531	6.335	0.115	0.081	0.95036
8928.57	1.1200	0.525	6.274	0.113	0.081	0.94997
9009.01	1.1100	0.519	6.213	0.111	0.080	0.94955
9090.91	1.1000	0.514	6.151	0.109	0.079	0.94910
9174.31	1.0900	0.509	6.089	0.107	0.078	0.94855
9259.26	1.0800	0.505	6.027	0.105	0.077	0.94800
9345.79	1.0700	0.501	5.966	0.103	0.076	0.94740
9433.96	1.0600	0.497	5.904	0.101	0.075	0.94680
9523.81	1.0500	0.493	5.842	0.099	0.074	0.94617
9615.38	1.0400	0.488	5.781	0.097	0.073	0.94553
9708.74	1.0300	0.485	5.719	0.095	0.072	0.94481
9803.92	1.0200	0.481	5.659	0.093	0.072	0.94416
9900.99	1.0100	0.476	5.597	0.091	0.071	0.94355
10000.00	1.0000	0.471	5.536	0.089	0.070	0.94289
10101.01	0.9900	0.467	5.475	0.088	0.069	0.94223
10204.08	0.9800	0.461	5.414	0.086	0.068	0.94169
10309.28	0.9700	0.455	5.352	0.084	0.067	0.94120
10416.67	0.9600	0.450	5.289	0.082	0.066	0.94058
10526.32	0.9500	0.444	5.226	0.081	0.065	0.93992
10638.30	0.9400	0.438	5.163	0.079	0.064	0.93936
10752.69	0.9300	0.432	5.099	0.077	0.063	0.93882
10869.56	0.9200	0.426	5.033	0.075	0.063	0.93810
10989.01	0.9100	0.423	4.968	0.073	0.062	0.93710
11111.11	0.9000	0.418	4.904	0.072	0.061	0.93624
11235.95	0.8900	0.412	4.839	0.070	0.060	0.93556
11363.64	0.8800	0.406	4.772	0.068	0.059	0.93474
11494.25	0.8700	0.403	4.704	0.067	0.058	0.93358
11627.91	0.8600	0.400	4.638	0.065	0.057	0.93227
11764.71	0.8500	0.396	4.570	0.063	0.056	0.93101
11904.76	0.8400	0.394	4.501	0.062	0.055	0.92943
12048.19	0.8300	0.393	4.433	0.060	0.055	0.92760



WN	WL	N	K	DN	DK	R
12195.12	0.8200	0.394	4.366	0.059	0.054	0.92539
12345.68	0.8100	0.394	4.301	0.057	0.053	0.92337
12500.00	0.8000	0.392	4.235	0.056	0.052	0.92161
12658.23	0.7900	0.390	4.168	0.054	0.051	0.91968
12820.51	0.7800	0.388	4.101	0.053	0.051	0.91765
12987.01	0.7700	0.387	4.032	0.051	0.050	0.91550
13157.89	0.7600	0.386	3.963	0.050	0.049	0.91303
13333.33	0.7500	0.386	3.894	0.048	0.048	0.91015
13513.51	0.7400	0.387	3.827	0.047	0.047	0.90720
13698.63	0.7300	0.386	3.759	0.046	0.046	0.90440
13888.89	0.7200	0.386	3.689	0.044	0.046	0.90128
14084.51	0.7100	0.386	3.620	0.043	0.045	0.89798
14285.71	0.7000	0.386	3.550	0.042	0.044	0.89448
14492.75	0.6900	0.385	3.479	0.041	0.043	0.89076
14705.88	0.6800	0.386	3.407	0.039	0.042	0.88673
14925.37	0.6700	0.387	3.334	0.038	0.041	0.88219
15151.51	0.6600	0.388	3.261	0.037	0.041	0.87722
15384.62	0.6500	0.390	3.187	0.036	0.040	0.87190
15625.00	0.6400	0.391	3.111	0.034	0.039	0.86620
15873.02	0.6300	0.393	3.034	0.033	0.038	0.85978
16129.03	0.6200	0.397	2.956	0.032	0.037	0.85248
16393.44	0.6100	0.400	2.875	0.031	0.036	0.84443
16666.67	0.6000	0.405	2.792	0.030	0.035	0.83520
16949.15	0.5900	0.412	2.706	0.029	0.034	0.82439
17241.38	0.5800	0.422	2.614	0.028	0.033	0.81052
17543.86	0.5700	0.441	2.520	0.027	0.032	0.79198
17857.14	0.5600	0.468	2.427	0.026	0.031	0.76906
18181.82	0.5500	0.500	2.337	0.025	0.031	0.74228
18518.52	0.5400	0.538	2.250	0.025	0.030	0.71207
18867.92	0.5300	0.583	2.167	0.024	0.029	0.67813
19230.77	0.5200	0.634	2.092	0.024	0.028	0.64226
19607.84	0.5100	0.687	2.027	0.024	0.027	0.60718
20000.00	0.5000	0.737	1.970	0.024	0.026	0.57502
20408.16	0.4900	0.783	1.920	0.024	0.025	0.54636
20833.33	0.4800	0.824	1.873	0.023	0.025	0.52047
21276.60	0.4700	0.860	1.825	0.023	0.024	0.49612
21739.13	0.4600	0.895	1.778	0.023	0.023	0.47252
22222.22	0.4500	0.929	1.729	0.022	0.022	0.44917
22727.27	0.4400	0.963	1.680	0.022	0.021	0.42580
23255.81	0.4300	0.999	1.630	0.021	0.020	0.40220
23809.52	0.4200	1.039	1.581	0.021	0.019	0.37860
24390.24	0.4100	1.083	1.534	0.020	0.018	0.35567
25000.00	0.4000	1.131	1.493	0.020	0.017	0.33451
25641.03	0.3900	1.184	1.460	0.019	0.016	0.31663
26315.79	0.3800	1.237	1.440	0.019	0.016	0.30352
27027.03	0.3700	1.284	1.431	0.019	0.015	0.29564
27777.78	0.3600	1.322	1.433	0.019	0.015	0.29233
28571.43	0.3500	1.347	1.442	0.019	0.015	0.29256
29411.76	0.3400	1.355	1.451	0.019	0.015	0.29424
30303.03	0.3300	1.351	1.454	0.019	0.015	0.29529

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.341	1.449	0.019	0.015	0.29499
32258.06	0.3100	1.325	1.438	0.019	0.015	0.29343
33333.33	0.3000	1.305	1.420	0.019	0.015	0.29037
34482.76	0.2900	1.283	1.394	0.018	0.015	0.28539
35714.29	0.2800	1.263	1.361	0.018	0.014	0.27802
37037.04	0.2700	1.249	1.322	0.017	0.014	0.26857
38461.54	0.2600	1.242	1.288	0.017	0.013	0.25938
40000.00	0.2500	1.231	1.263	0.017	0.013	0.25341
41666.67	0.2400	1.206	1.242	0.016	0.013	0.24994
43478.26	0.2300	1.164	1.209	0.016	0.012	0.24487
45454.55	0.2200	1.121	1.152	0.015	0.012	0.23297
47619.05	0.2100	1.094	1.089	0.015	0.011	0.21694

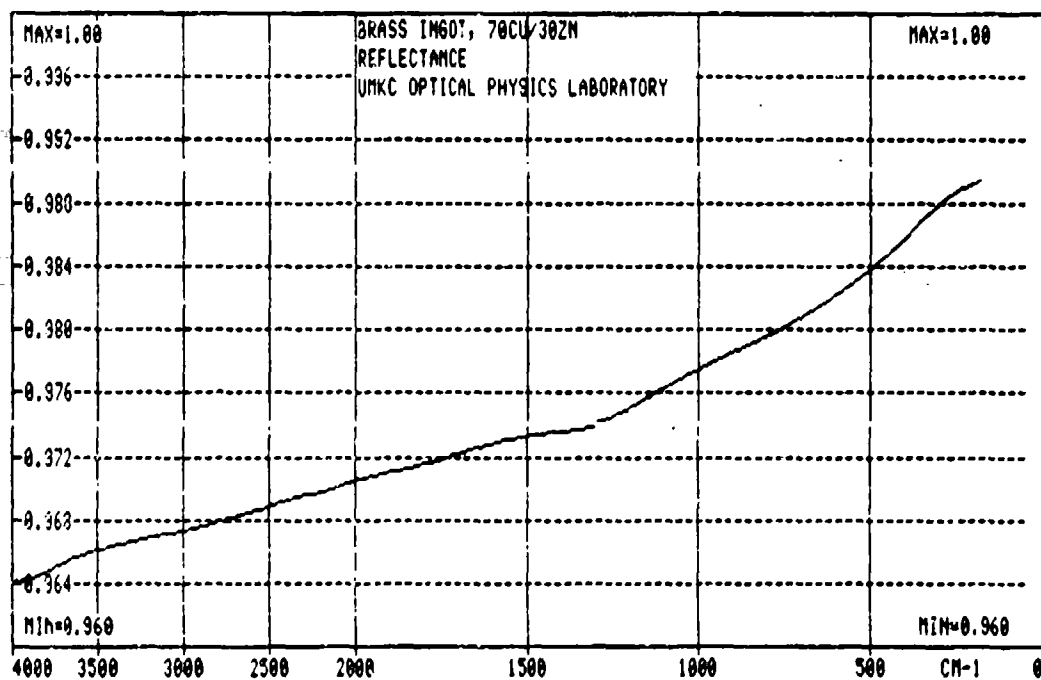


Figure 64. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of brass 70Cu/30Zn.

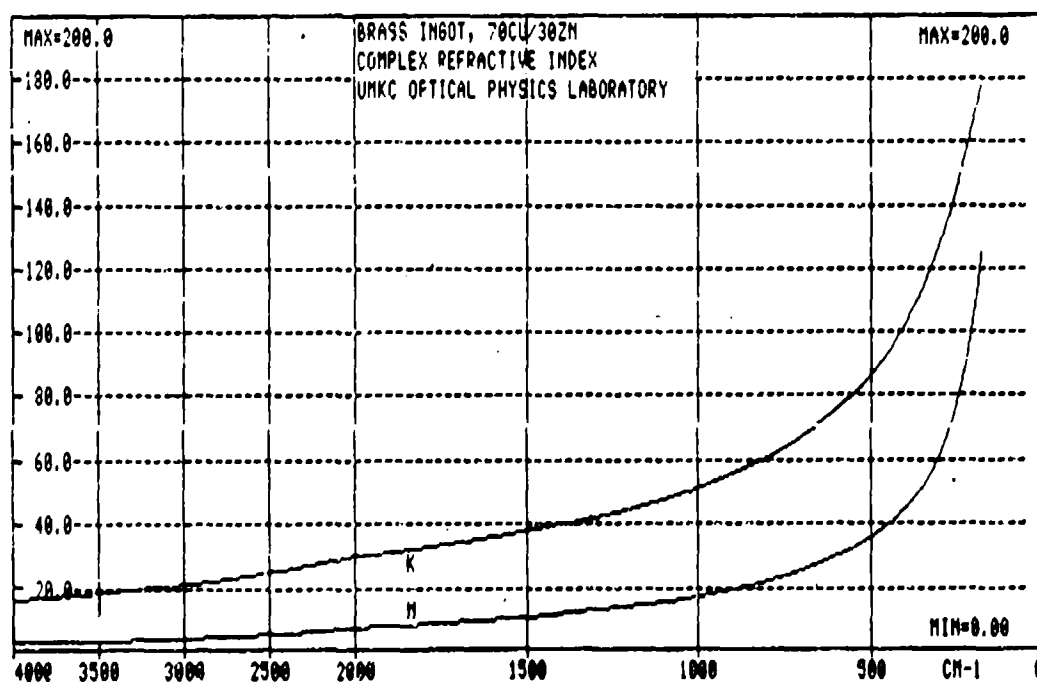


Figure 65. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for brass 70Cu/30Zn.

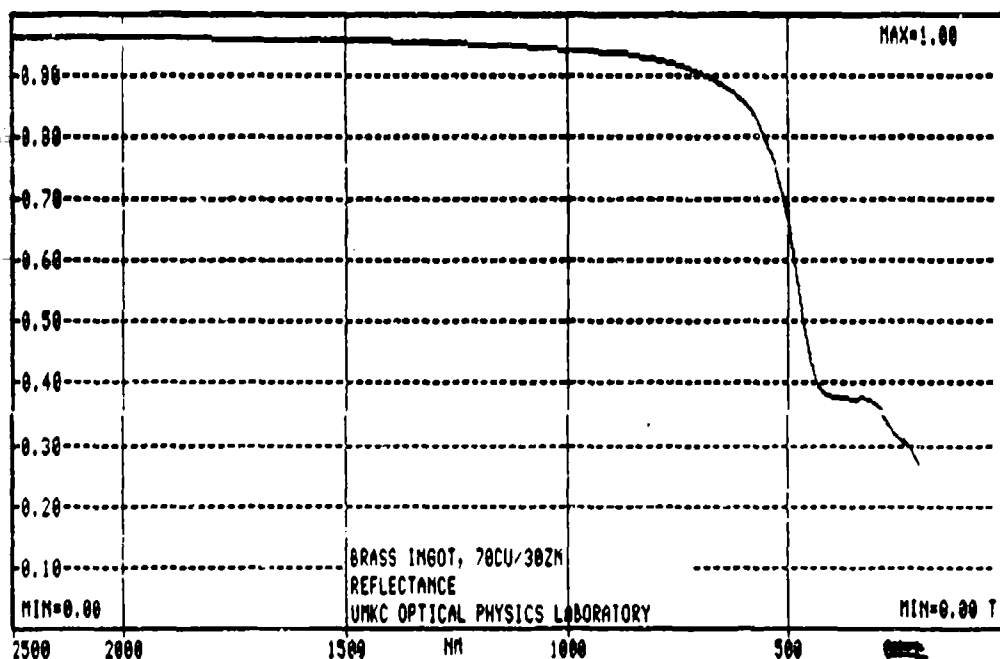


Figure 66. The uv-vis-nir (2,500-200 nm) reflectance spectrum of brass 70Cu/30Zn.

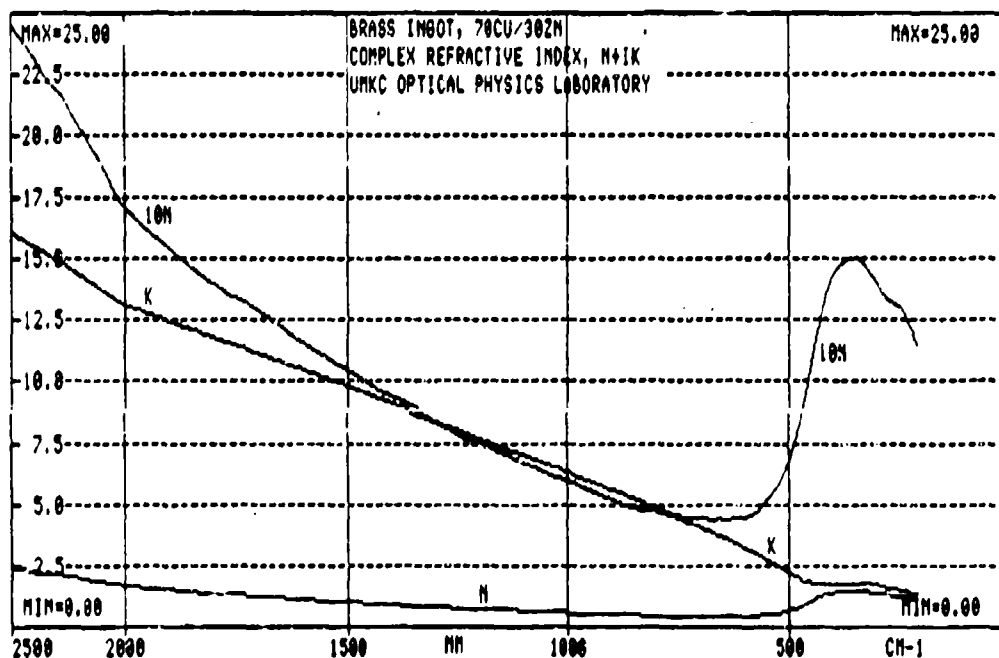


Figure 67. The uv-vis-nir (2,500-210 nm) complex refractive indices n and k for brass 70Cu/30Zn.

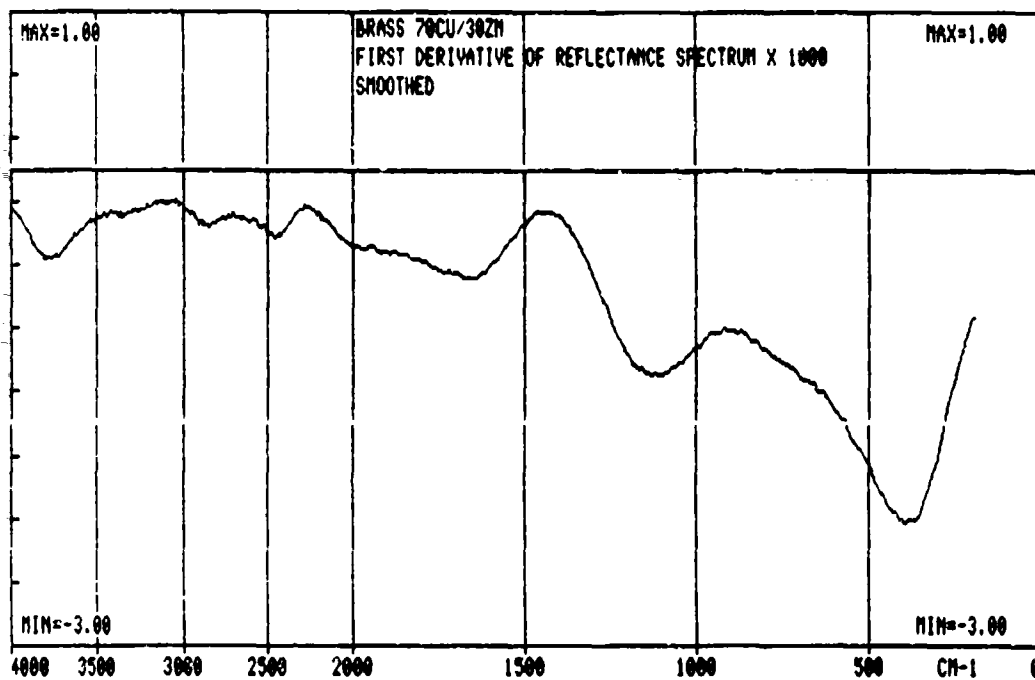


Figure 68. The first derivative of the infrared reflectance spectrum of brass 70Cu/30Zn.

WN	WL	N	K	DN	DK	R
180.00	55.5556	128.885	179.300	40.801	116.870	0.98955
190.00	52.6316	118.974	175.042	43.669	106.813	0.98950
200.00	50.0000	110.527	170.240	44.310	96.620	0.98939
210.00	47.6190	103.106	165.710	44.403	87.839	0.98930
220.00	45.4545	96.436	161.229	43.994	80.033	0.98920
230.00	43.4783	90.419	156.828	43.228	73.082	0.98909
240.00	41.6667	84.991	152.486	42.170	66.878	0.98898
250.00	40.0000	80.139	148.216	40.882	61.372	0.98884
260.00	38.4615	75.795	144.087	39.479	56.499	0.98870
270.00	37.0370	71.895	140.107	38.014	52.177	0.98854
280.00	35.7143	68.393	136.282	36.526	48.339	0.98838
290.00	34.4828	65.251	132.621	35.045	44.933	0.98820
300.00	33.3333	62.410	129.145	33.610	41.900	0.98802
310.00	32.2581	59.821	125.831	32.227	39.176	0.98783
320.00	31.2500	57.475	122.654	30.882	36.731	0.98763
330.00	30.3030	55.370	119.629	29.589	34.551	0.98742
340.00	29.4118	53.449	116.784	28.379	32.593	0.98721
350.00	28.5714	51.675	114.093	27.244	30.817	0.98699
360.00	27.7778	50.022	111.531	26.174	29.191	0.98678
370.00	27.0270	48.511	109.066	25.144	27.711	0.98656
380.00	26.3158	47.131	106.723	24.171	26.370	0.98633
390.00	25.6410	45.879	104.502	23.252	25.157	0.98610
400.00	25.0000	44.720	102.423	22.405	24.055	0.98587
410.00	24.3902	43.616	100.470	21.626	23.033	0.98566
420.00	23.8095	42.559	98.608	20.897	22.079	0.98544
430.00	23.2558	41.557	96.820	20.205	21.187	0.98523
440.00	22.7273	40.630	95.102	19.544	20.364	0.98502
450.00	22.2222	39.760	93.481	18.929	19.604	0.98481
460.00	21.7391	38.921	91.950	18.360	18.892	0.98461
470.00	21.2766	38.101	90.491	17.830	18.217	0.98442
480.00	20.8333	37.298	89.081	17.326	17.571	0.98423
490.00	20.4082	36.537	87.705	16.837	16.961	0.98404
500.00	20.0000	35.815	86.381	16.371	16.389	0.98386
510.00	19.6078	35.134	85.110	15.928	15.855	0.98367
520.00	19.2308	34.469	83.900	15.513	15.347	0.98349
530.00	18.8679	33.830	82.726	15.116	14.865	0.98331
540.00	18.5185	33.212	81.598	14.739	14.406	0.98314
550.00	18.1818	32.622	80.507	14.378	13.974	0.98297
560.00	17.8571	32.043	79.466	14.040	13.560	0.98281
570.00	17.5439	31.475	78.457	13.716	13.163	0.98265
580.00	17.2414	30.915	77.478	13.407	12.780	0.98250
590.00	16.9492	30.372	76.519	13.107	12.412	0.98235
600.00	16.6667	29.848	75.584	12.817	12.060	0.98220
610.00	16.3934	29.342	74.674	12.536	11.724	0.98205
620.00	16.1290	28.857	73.791	12.266	11.404	0.98190
630.00	15.8730	28.385	72.939	12.008	11.099	0.98176
640.00	15.6250	27.922	72.113	11.762	10.804	0.98162
650.00	15.3846	27.464	71.308	11.525	10.519	0.98148
660.00	15.1515	27.018	70.518	11.294	10.244	0.98135
670.00	14.9254	26.585	69.745	11.070	9.979	0.98122

WN	WL	N	K	DN	DK	R
680.00	14.7059	26.165	68.989	10.852	9.725	0.98108
690.00	14.4928	25.759	68.251	10.641	9.481	0.98095
700.00	14.2857	25.367	67.531	10.437	9.248	0.98082
710.00	14.0845	24.982	66.833	10.241	9.022	0.98069
720.00	13.8889	24.608	66.149	10.050	8.805	0.98056
730.00	13.6986	24.238	65.482	9.866	8.594	0.98044
740.00	13.5135	23.884	64.825	9.685	8.392	0.98031
750.00	13.3333	23.537	64.187	9.512	8.198	0.98019
760.00	13.1579	23.200	63.563	9.343	8.010	0.98007
770.00	12.9870	22.867	62.955	9.181	7.828	0.97995
780.00	12.8205	22.542	62.357	9.022	7.651	0.97983
790.00	12.6582	22.227	61.773	8.868	7.482	0.97972
800.00	12.5000	21.916	61.204	8.720	7.317	0.97961
810.00	12.3457	21.606	60.647	8.576	7.156	0.97950
820.00	12.1951	21.301	60.094	8.434	6.998	0.97939
830.00	12.0482	21.006	59.547	8.294	6.846	0.97928
840.00	11.9048	20.726	59.009	8.157	6.701	0.97917
850.00	11.7647	20.453	58.489	8.025	6.562	0.97906
860.00	11.6279	20.182	57.982	7.898	6.426	0.97895
870.00	11.4943	19.912	57.485	7.775	6.293	0.97885
880.00	11.3636	19.646	56.993	7.654	6.163	0.97875
890.00	11.2360	19.385	56.509	7.535	6.036	0.97865
900.00	11.1111	19.130	56.031	7.419	5.913	0.97855
910.00	10.9890	18.880	55.560	7.305	5.794	0.97845
920.00	10.8696	18.636	55.097	7.194	5.678	0.97835
930.00	10.7527	18.397	54.640	7.084	5.565	0.97825
940.00	10.6383	18.162	54.190	6.977	5.455	0.97815
950.00	10.5263	17.932	53.746	6.872	5.348	0.97805
960.00	10.4167	17.706	53.306	6.769	5.244	0.97795
970.00	10.3093	17.486	52.870	6.667	5.143	0.97784
980.00	10.2041	17.276	52.438	6.566	5.045	0.97773
990.00	10.1010	17.076	52.013	6.467	4.952	0.97762
1000.00	10.0000	16.878	51.601	6.372	4.862	0.97751
1010.00	9.9010	16.684	51.193	6.278	4.773	0.97739
1020.00	9.8039	16.493	50.790	6.187	4.687	0.97728
1030.00	9.7087	16.312	50.389	6.095	4.604	0.97716
1040.00	9.6154	16.137	49.997	6.006	4.524	0.97704
1050.00	9.5238	15.971	49.611	5.919	4.447	0.97691
1060.00	9.4340	15.806	49.236	5.835	4.373	0.97679
1070.00	9.3458	15.649	48.865	5.752	4.301	0.97666
1080.00	9.2593	15.493	48.504	5.672	4.231	0.97654
1090.00	9.1743	15.343	48.147	5.593	4.164	0.97641
1100.00	9.0909	15.194	47.798	5.517	4.098	0.97629
1110.00	9.0090	15.051	47.453	5.442	4.034	0.97616
1120.00	8.9286	14.912	47.114	5.368	3.972	0.97603
1130.00	8.8496	14.779	46.780	5.296	3.912	0.97590
1140.00	8.7719	14.652	46.456	5.226	3.855	0.97577
1150.00	8.6957	14.526	46.140	5.159	3.800	0.97564
1160.00	8.6207	14.403	45.830	5.093	3.746	0.97551
1170.00	8.5470	14.280	45.527	5.029	3.693	0.97539

WN	WL	N	K	DN	DK	R
1180.00	8.4746	14.164	45.229	4.967	3.642	0.97526
1190.00	8.4034	14.049	44.939	4.906	3.593	0.97514
1200.00	8.3333	13.938	44.657	4.848	3.545	0.97502
1210.00	8.2645	13.825	44.383	4.792	3.498	0.97491
1220.00	8.1967	13.712	44.116	4.737	3.452	0.97480
1230.00	8.1301	13.597	43.852	4.684	3.406	0.97470
1240.00	8.0645	13.484	43.592	4.632	3.361	0.97460
1250.00	8.0000	13.375	43.337	4.581	3.318	0.97450
1260.00	7.9365	13.266	43.088	4.532	3.275	0.97441
1270.00	7.8740	13.158	42.847	4.484	3.233	0.97432
1280.00	7.8125	13.047	42.611	4.438	3.192	0.97424
1290.00	7.7519	12.936	42.380	4.394	3.151	0.97417
1300.00	7.6923	12.821	42.154	4.350	3.110	0.97411
1310.00	7.6336	12.705	41.930	4.308	3.069	0.97405
1320.00	7.5758	12.586	41.707	4.266	3.028	0.97400
1330.00	7.5188	12.468	41.484	4.224	2.987	0.97395
1340.00	7.4627	12.352	41.264	4.183	2.948	0.97390
1350.00	7.4074	12.235	41.047	4.143	2.908	0.97386
1360.00	7.3529	12.118	40.834	4.104	2.869	0.97382
1370.00	7.2993	11.998	40.621	4.065	2.830	0.97378
1380.00	7.2464	11.880	40.409	4.026	2.791	0.97375
1390.00	7.1942	11.762	40.197	3.988	2.753	0.97372
1400.00	7.1429	11.644	39.989	3.950	2.716	0.97369
1410.00	7.0922	11.527	39.780	3.913	2.678	0.97366
1420.00	7.0423	11.407	39.573	3.876	2.641	0.97364
1430.00	6.9930	11.291	39.365	3.839	2.604	0.97361
1440.00	6.9444	11.174	39.159	3.802	2.568	0.97359
1450.00	6.8966	11.060	38.951	3.765	2.532	0.97356
1460.00	6.8493	10.946	38.744	3.729	2.497	0.97353
1470.00	6.8027	10.836	38.538	3.692	2.462	0.97350
1480.00	6.7568	10.728	38.334	3.656	2.429	0.97347
1490.00	6.7114	10.620	38.133	3.621	2.395	0.97344
1500.00	6.6667	10.511	37.931	3.586	2.362	0.97341
1510.00	6.6225	10.403	37.729	3.551	2.329	0.97338
1520.00	6.5789	10.300	37.524	3.515	2.297	0.97334
1530.00	6.5359	10.199	37.321	3.480	2.266	0.97330
1540.00	6.4935	10.103	37.120	3.445	2.236	0.97325
1550.00	6.4516	10.009	36.921	3.411	2.207	0.97320
1560.00	6.4103	9.916	36.724	3.377	2.178	0.97315
1570.00	6.3694	9.825	36.528	3.343	2.150	0.97309
1580.00	6.3291	9.738	36.332	3.309	2.123	0.97303
1590.00	6.2893	9.656	36.140	3.277	2.096	0.97297
1600.00	6.2500	9.573	35.952	3.245	2.071	0.97291
1610.00	6.2112	9.492	35.766	3.213	2.045	0.97284
1620.00	6.1728	9.411	35.581	3.182	2.020	0.97278
1630.00	6.1350	9.334	35.397	3.151	1.996	0.97272
1640.00	6.0976	9.258	35.216	3.120	1.973	0.97265
1650.00	6.0606	9.183	35.037	3.091	1.950	0.97258
1660.00	6.0241	9.111	34.859	3.061	1.927	0.97251
1670.00	5.9880	9.041	34.685	3.032	1.905	0.97244



WN	WL	N	K	DN	DK	R
1680.00	5.9524	8.973	34.514	3.004	1.884	0.97237
1690.00	5.9172	8.903	34.347	2.976	1.863	0.97231
1700.00	5.8824	8.834	34.181	2.949	1.842	0.97224
1710.00	5.8480	8.765	34.015	2.922	1.822	0.97218
1720.00	5.8140	8.698	33.850	2.896	1.802	0.97212
1730.00	5.7803	8.633	33.688	2.869	1.782	0.97205
1740.00	5.7471	8.569	33.528	2.844	1.763	0.97198
1750.00	5.7143	8.507	33.371	2.818	1.744	0.97192
1760.00	5.6818	8.445	33.217	2.794	1.726	0.97186
1770.00	5.6497	8.381	33.065	2.770	1.707	0.97180
1780.00	5.6180	8.317	32.914	2.746	1.689	0.97175
1790.00	5.5866	8.252	32.763	2.722	1.671	0.97170
1800.00	5.5556	8.190	32.612	2.698	1.653	0.97164
1810.00	5.5249	8.129	32.461	2.675	1.635	0.97158
1820.00	5.4945	8.072	32.313	2.652	1.619	0.97152
1830.00	5.4645	8.015	32.168	2.629	1.602	0.97146
1840.00	5.4348	7.958	32.026	2.607	1.586	0.97140
1850.00	5.4054	7.899	31.885	2.586	1.570	0.97135
1860.00	5.3763	7.841	31.745	2.564	1.554	0.97130
1870.00	5.3476	7.784	31.606	2.543	1.538	0.97125
1880.00	5.3191	7.727	31.468	2.522	1.522	0.97120
1890.00	5.2910	7.671	31.331	2.501	1.507	0.97115
1900.00	5.2632	7.615	31.195	2.481	1.492	0.97110
1910.00	5.2356	7.560	31.060	2.460	1.477	0.97105
1920.00	5.2083	7.506	30.926	2.440	1.462	0.97100
1930.00	5.1813	7.453	30.793	2.420	1.448	0.97095
1940.00	5.1546	7.400	30.662	2.401	1.433	0.97090
1950.00	5.1282	7.348	30.532	2.382	1.419	0.97085
1960.00	5.1020	7.296	30.402	2.363	1.405	0.97080
1970.00	5.0761	7.245	30.274	2.344	1.392	0.97075
1980.00	5.0505	7.195	30.148	2.325	1.378	0.97070
1990.00	5.0251	7.146	30.022	2.307	1.365	0.97065
2000.00	5.0000	7.097	29.898	2.289	1.352	0.97060
2010.00	4.9751	7.049	29.775	2.271	1.340	0.97055
2020.00	4.9505	7.002	29.654	2.253	1.327	0.97050
2030.00	4.9261	6.954	29.535	2.236	1.315	0.97046
2040.00	4.9020	6.906	29.417	2.219	1.303	0.97042
2050.00	4.8780	6.857	29.299	2.202	1.290	0.97038
2060.00	4.8544	6.808	29.181	2.186	1.278	0.97034
2070.00	4.8309	6.762	29.064	2.169	1.266	0.97030
2080.00	4.8077	6.717	28.948	2.153	1.255	0.97026
2090.00	4.7847	6.671	28.834	2.137	1.243	0.97022
2100.00	4.7619	6.624	28.721	2.121	1.231	0.97018
2110.00	4.7393	6.579	28.608	2.105	1.220	0.97014
2120.00	4.7170	6.534	28.496	2.089	1.209	0.97011
2130.00	4.6948	6.491	28.385	2.074	1.198	0.97007
2140.00	4.6729	6.446	28.276	2.059	1.188	0.97003
2150.00	4.6512	6.402	28.168	2.044	1.177	0.97000
2160.00	4.6296	6.359	28.060	2.029	1.166	0.96997
2170.00	4.6083	6.315	27.954	2.014	1.156	0.96994

WN	WL	N	K	DN	DK	R
2180.00	4.5872	6.271	27.848	2.000	1.145	0.96991
2190.00	4.5662	6.226	27.742	1.985	1.135	0.96989
2200.00	4.5455	6.183	27.637	1.971	1.125	0.96986
2210.00	4.5249	6.139	27.533	1.957	1.114	0.96984
2220.00	4.5045	6.097	27.428	1.943	1.104	0.96981
2230.00	4.4843	6.053	27.325	1.929	1.094	0.96979
2240.00	4.4643	6.012	27.222	1.915	1.085	0.96976
2250.00	4.4444	5.969	27.120	1.902	1.075	0.96974
2260.00	4.4248	5.928	27.017	1.888	1.065	0.96971
2270.00	4.4053	5.887	26.916	1.875	1.056	0.96969
2280.00	4.3860	5.847	26.815	1.861	1.046	0.96966
2290.00	4.3668	5.806	26.716	1.848	1.037	0.96964
2300.00	4.3478	5.766	26.616	1.835	1.028	0.96961
2310.00	4.3290	5.726	26.518	1.822	1.019	0.96959
2320.00	4.3103	5.687	26.420	1.809	1.010	0.96957
2330.00	4.2918	5.646	26.322	1.797	1.001	0.96955
2340.00	4.2735	5.607	26.223	1.784	0.992	0.96953
2350.00	4.2553	5.568	26.124	1.771	0.983	0.96950
2360.00	4.2373	5.531	26.026	1.758	0.975	0.96947
2370.00	4.2194	5.494	25.928	1.746	0.967	0.96943
2380.00	4.2017	5.459	25.831	1.733	0.958	0.96939
2390.00	4.1841	5.425	25.735	1.721	0.951	0.96935
2400.00	4.1667	5.392	25.640	1.709	0.943	0.96931
2410.00	4.1494	5.359	25.547	1.697	0.935	0.96927
2420.00	4.1322	5.325	25.454	1.685	0.927	0.96923
2430.00	4.1152	5.292	25.361	1.673	0.920	0.96919
2440.00	4.0984	5.260	25.269	1.662	0.913	0.96915
2450.00	4.0816	5.230	25.178	1.650	0.905	0.96910
2460.00	4.0650	5.200	25.089	1.639	0.897	0.96906
2470.00	4.0486	5.169	25.001	1.628	0.892	0.96902
2480.00	4.0323	5.137	24.913	1.617	0.885	0.96898
2490.00	4.0161	5.107	24.825	1.606	0.878	0.96894
2500.00	4.0000	5.077	24.739	1.595	0.871	0.96891
2510.00	3.9841	5.047	24.653	1.585	0.864	0.96887
2520.00	3.9683	5.017	24.568	1.574	0.858	0.96883
2530.00	3.9526	4.987	24.484	1.564	0.851	0.96880
2540.00	3.9370	4.957	24.400	1.554	0.844	0.96877
2550.00	3.9216	4.928	24.316	1.544	0.838	0.96873
2560.00	3.9063	4.898	24.233	1.533	0.832	0.96870
2570.00	3.8911	4.870	24.151	1.524	0.825	0.96867
2580.00	3.8760	4.841	24.069	1.514	0.819	0.96863
2590.00	3.8610	4.813	23.988	1.504	0.813	0.96860
2600.00	3.8462	4.785	23.907	1.494	0.807	0.96857
2610.00	3.8314	4.756	23.827	1.485	0.801	0.96854
2620.00	3.8168	4.728	23.748	1.475	0.795	0.96851
2630.00	3.8023	4.700	23.668	1.466	0.789	0.96848
2640.00	3.7879	4.672	23.589	1.456	0.783	0.96845
2650.00	3.7736	4.646	23.511	1.447	0.777	0.96842
2660.00	3.7594	4.618	23.433	1.438	0.772	0.96839
2670.00	3.7453	4.591	23.356	1.429	0.766	0.96836

WN	WL	N	K	DN	DK	R
2680.00	3.7313	4.564	23.279	1.420	0.760	0.96833
2690.00	3.7175	4.538	23.202	1.411	0.755	0.96830
2700.00	3.7037	4.513	23.126	1.402	0.749	0.96827
2710.00	3.6900	4.487	23.051	1.393	0.744	0.96824
2720.00	3.6765	4.461	22.977	1.384	0.739	0.96821
2730.00	3.6630	4.434	22.902	1.376	0.733	0.96819
2740.00	3.6496	4.409	22.828	1.367	0.728	0.96816
2750.00	3.6364	4.383	22.753	1.359	0.723	0.96813
2760.00	3.6232	4.359	22.679	1.350	0.718	0.96810
2770.00	3.6101	4.335	22.606	1.342	0.713	0.96807
2780.00	3.5971	4.310	22.534	1.334	0.708	0.96804
2790.00	3.5842	4.285	22.462	1.325	0.703	0.96801
2800.00	3.5714	4.261	22.390	1.317	0.698	0.96798
2810.00	3.5587	4.238	22.317	1.309	0.693	0.96794
2820.00	3.5461	4.216	22.246	1.301	0.688	0.96791
2830.00	3.5336	4.194	22.176	1.293	0.684	0.96787
2840.00	3.5211	4.171	22.106	1.285	0.679	0.96783
2850.00	3.5088	4.149	22.037	1.278	0.674	0.96780
2860.00	3.4965	4.127	21.968	1.270	0.670	0.96777
2870.00	3.4843	4.105	21.900	1.262	0.665	0.96773
2880.00	3.4722	4.083	21.832	1.255	0.661	0.96770
2890.00	3.4602	4.062	21.765	1.247	0.657	0.96767
2900.00	3.4483	4.041	21.698	1.240	0.652	0.96763
2910.00	3.4364	4.020	21.631	1.233	0.648	0.96760
2920.00	3.4247	3.999	21.566	1.226	0.644	0.96757
2930.00	3.4130	3.978	21.501	1.218	0.640	0.96754
2940.00	3.4014	3.957	21.436	1.211	0.636	0.96751
2950.00	3.3898	3.935	21.372	1.204	0.631	0.96749
2960.00	3.3784	3.915	21.308	1.197	0.627	0.96746
2970.00	3.3670	3.893	21.244	1.191	0.623	0.96744
2980.00	3.3557	3.873	21.181	1.184	0.619	0.96741
2990.00	3.3445	3.852	21.118	1.177	0.615	0.96739
3000.00	3.3333	3.832	21.055	1.170	0.611	0.96736
3010.00	3.3223	3.812	20.993	1.163	0.607	0.96734
3020.00	3.3113	3.791	20.931	1.157	0.603	0.96732
3030.00	3.3003	3.770	20.870	1.150	0.600	0.96730
3040.00	3.2895	3.750	20.808	1.144	0.596	0.96728
3050.00	3.2787	3.730	20.746	1.137	0.592	0.96726
3060.00	3.2680	3.710	20.685	1.131	0.588	0.96724
3070.00	3.2573	3.690	20.625	1.125	0.584	0.96722
3080.00	3.2468	3.670	20.565	1.118	0.581	0.96720
3090.00	3.2362	3.650	20.505	1.112	0.577	0.96718
3100.00	3.2258	3.630	20.445	1.106	0.573	0.96717
3110.00	3.2154	3.610	20.386	1.099	0.569	0.96715
3120.00	3.2051	3.591	20.326	1.093	0.566	0.96713
3130.00	3.1949	3.571	20.266	1.087	0.562	0.96711
3140.00	3.1847	3.553	20.207	1.081	0.559	0.96709
3150.00	3.1746	3.535	20.148	1.075	0.555	0.96706
3160.00	3.1646	3.516	20.090	1.069	0.552	0.96704
3170.00	3.1546	3.498	20.032	1.063	0.548	0.96701

WN	WL	N	K	DN	DK	R
3180.00	3.1447	3.480	19.974	1.057	0.545	0.96699
3190.00	3.1348	3.462	19.917	1.051	0.542	0.96697
3200.00	3.1250	3.444	19.860	1.045	0.538	0.96695
3210.00	3.1153	3.426	19.803	1.040	0.535	0.96693
3220.00	3.1056	3.408	19.746	1.034	0.532	0.96691
3230.00	3.0960	3.390	19.690	1.028	0.529	0.96689
3240.00	3.0864	3.373	19.633	1.022	0.525	0.96686
3250.00	3.0769	3.356	19.577	1.017	0.522	0.96684
3260.00	3.0675	3.339	19.521	1.011	0.519	0.96681
3270.00	3.0581	3.323	19.466	1.006	0.516	0.96678
3280.00	3.0488	3.307	19.410	1.000	0.513	0.96675
3290.00	3.0395	3.291	19.356	0.995	0.510	0.96672
3300.00	3.0303	3.274	19.302	0.989	0.507	0.96670
3310.00	3.0211	3.258	19.248	0.984	0.504	0.96668
3320.00	3.0120	3.242	19.193	0.979	0.501	0.96665
3330.00	3.0030	3.227	19.140	0.973	0.498	0.96662
3340.00	2.9940	3.211	19.087	0.968	0.496	0.96659
3350.00	2.9851	3.196	19.034	0.963	0.493	0.96656
3360.00	2.9762	3.180	18.981	0.958	0.490	0.96654
3370.00	2.9674	3.165	18.929	0.953	0.487	0.96651
3380.00	2.9586	3.149	18.877	0.948	0.484	0.96649
3390.00	2.9499	3.134	18.824	0.942	0.482	0.96646
3400.00	2.9412	3.119	18.772	0.937	0.479	0.96643
3410.00	2.9326	3.105	18.720	0.932	0.476	0.96640
3420.00	2.9240	3.091	18.669	0.927	0.474	0.96637
3430.00	2.9155	3.077	18.619	0.923	0.471	0.96634
3440.00	2.9070	3.062	18.568	0.918	0.468	0.96631
3450.00	2.8986	3.047	18.518	0.913	0.466	0.96629
3460.00	2.8902	3.033	18.468	0.908	0.463	0.96626
3470.00	2.8818	3.018	18.418	0.903	0.461	0.96624
3480.00	2.8736	3.004	18.368	0.899	0.458	0.96621
3490.00	2.8653	2.990	18.318	0.894	0.456	0.96618
3500.00	2.8571	2.977	18.268	0.889	0.453	0.96615
3510.00	2.8490	2.963	18.218	0.885	0.451	0.96612
3520.00	2.8409	2.950	18.169	0.880	0.448	0.96608
3530.00	2.8329	2.937	18.120	0.875	0.446	0.96605
3540.00	2.8249	2.924	18.072	0.871	0.443	0.96602
3550.00	2.8169	2.911	18.023	0.866	0.441	0.96598
3560.00	2.8090	2.898	17.974	0.862	0.439	0.96594
3570.00	2.8011	2.886	17.927	0.857	0.437	0.96591
3580.00	2.7933	2.874	17.879	0.853	0.434	0.96587
3590.00	2.7855	2.861	17.832	0.849	0.432	0.96583
3600.00	2.7778	2.849	17.784	0.844	0.430	0.96579
3610.00	2.7701	2.837	17.737	0.840	0.428	0.96576
3620.00	2.7624	2.826	17.691	0.836	0.426	0.96572
3630.00	2.7548	2.813	17.644	0.831	0.423	0.96568
3640.00	2.7473	2.802	17.597	0.827	0.421	0.96564
3650.00	2.7397	2.790	17.551	0.823	0.419	0.96560
3660.00	2.7322	2.780	17.504	0.819	0.417	0.96555
3670.00	2.7248	2.769	17.458	0.815	0.415	0.96550

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.758	17.413	0.810	0.413	0.96545
3690.00	2.7100	2.748	17.368	0.806	0.411	0.96540
3700.00	2.7027	2.738	17.323	0.802	0.409	0.96535
3710.00	2.6954	2.728	17.278	0.798	0.407	0.96529
3720.00	2.6882	2.718	17.234	0.794	0.405	0.96524
3730.00	2.6810	2.709	17.190	0.791	0.403	0.96518
3740.00	2.6738	2.699	17.146	0.787	0.402	0.96513
3750.00	2.6667	2.690	17.103	0.783	0.400	0.96508
3760.00	2.6596	2.681	17.059	0.779	0.398	0.96502
3770.00	2.6525	2.672	17.017	0.775	0.396	0.96496
3780.00	2.6455	2.663	16.975	0.772	0.395	0.96490
3790.00	2.6385	2.654	16.934	0.768	0.393	0.96485
3800.00	2.6316	2.645	16.892	0.764	0.391	0.96480
3810.00	2.6247	2.636	16.851	0.761	0.389	0.96475
3820.00	2.6178	2.627	16.810	0.757	0.388	0.96470
3830.00	2.6110	2.618	16.770	0.754	0.386	0.96465
3840.00	2.6042	2.609	16.729	0.750	0.384	0.96460
3850.00	2.5974	2.600	16.689	0.747	0.383	0.96455
3860.00	2.5907	2.591	16.649	0.743	0.381	0.96450
3870.00	2.5840	2.582	16.610	0.740	0.379	0.96445
3880.00	2.5773	2.574	16.571	0.736	0.378	0.96440
3890.00	2.5707	2.565	16.533	0.733	0.376	0.96436
3900.00	2.5641	2.556	16.495	0.730	0.375	0.96432
3910.00	2.5575	2.546	16.457	0.727	0.373	0.96429
3920.00	2.5510	2.537	16.419	0.723	0.371	0.96426
3930.00	2.5445	2.527	16.381	0.720	0.370	0.96423
3940.00	2.5381	2.517	16.343	0.717	0.368	0.96420
3950.00	2.5316	2.507	16.306	0.714	0.366	0.96417
3960.00	2.5253	2.497	16.268	0.711	0.365	0.96415
3970.00	2.5189	2.487	16.230	0.707	0.363	0.96413
3980.00	2.5126	2.476	16.192	0.704	0.361	0.96411
3990.00	2.5063	2.467	16.153	0.701	0.360	0.96408
4000.00	2.5000	2.458	16.114	0.698	0.358	0.96404
4016.06	2.4900	2.443	16.055	0.693	0.356	0.96398
4032.26	2.4800	2.427	15.995	0.688	0.353	0.96394
4048.58	2.4700	2.415	15.932	0.682	0.351	0.96384
4065.04	2.4600	2.403	15.872	0.678	0.348	0.96375
4081.63	2.4500	2.391	15.813	0.673	0.346	0.96367
4098.36	2.4400	2.377	15.755	0.668	0.344	0.96361
4115.23	2.4300	2.363	15.697	0.663	0.342	0.96355
4132.23	2.4200	2.349	15.636	0.658	0.339	0.96349
4149.38	2.4100	2.337	15.578	0.653	0.337	0.96341
4166.67	2.4000	2.324	15.522	0.649	0.335	0.96335
4184.10	2.3900	2.306	15.466	0.644	0.332	0.96335
4201.68	2.3800	2.287	15.411	0.640	0.330	0.96338
4219.41	2.3700	2.266	15.350	0.635	0.327	0.96343
4237.29	2.3600	2.248	15.283	0.630	0.324	0.96340
4255.32	2.3500	2.232	15.217	0.624	0.321	0.96334
4273.50	2.3400	2.220	15.151	0.619	0.319	0.96322
4291.85	2.3300	2.211	15.087	0.614	0.317	0.96307

WN	WL	N	K	DN	DK	R
4310.35	2.3200	2.201	15.026	0.609	0.315	0.96293
4329.00	2.3100	2.193	14.966	0.605	0.313	0.96278
4347.83	2.3000	2.182	14.909	0.600	0.311	0.96268
4366.81	2.2900	2.171	14.853	0.596	0.309	0.96259
4385.96	2.2800	2.159	14.797	0.591	0.307	0.96251
4405.29	2.2700	2.144	14.743	0.587	0.305	0.96250
4424.78	2.2600	2.127	14.686	0.583	0.302	0.96250
4444.44	2.2500	2.110	14.628	0.578	0.300	0.96250
4464.29	2.2400	2.093	14.570	0.574	0.298	0.96250
4484.30	2.2300	2.073	14.511	0.569	0.295	0.96255
4504.50	2.2200	2.057	14.447	0.565	0.293	0.96251
4524.89	2.2100	2.042	14.385	0.560	0.290	0.96247
4545.45	2.2000	2.028	14.324	0.555	0.288	0.96240
4566.21	2.1900	2.014	14.265	0.551	0.286	0.96235
4587.16	2.1800	1.999	14.206	0.546	0.284	0.96230
4608.29	2.1700	1.983	14.146	0.542	0.281	0.96230
4629.63	2.1600	1.967	14.084	0.537	0.279	0.96227
4651.16	2.1500	1.950	14.023	0.533	0.277	0.96225
4672.90	2.1400	1.938	13.961	0.528	0.275	0.96216
4694.84	2.1300	1.924	13.902	0.524	0.272	0.96210
4716.98	2.1200	1.910	13.842	0.520	0.270	0.96206
4739.34	2.1100	1.894	13.784	0.515	0.268	0.96205
4761.90	2.1000	1.878	13.725	0.511	0.266	0.96205
4784.69	2.0900	1.861	13.666	0.507	0.264	0.96205
4807.69	2.0800	1.842	13.607	0.502	0.261	0.96210
4830.92	2.0700	1.826	13.545	0.498	0.259	0.96210
4854.37	2.0600	1.809	13.485	0.494	0.257	0.96210
4878.05	2.0500	1.789	13.426	0.489	0.254	0.96218
4901.96	2.0400	1.767	13.363	0.485	0.252	0.96228
4926.11	2.0300	1.748	13.295	0.480	0.249	0.96230
4950.50	2.0200	1.733	13.226	0.475	0.247	0.96223
4975.12	2.0100	1.723	13.161	0.471	0.245	0.96209
5000.00	2.0000	1.711	13.101	0.467	0.243	0.96199
5025.13	1.9900	1.696	13.044	0.463	0.241	0.96200
5050.50	1.9800	1.676	12.986	0.459	0.239	0.96211
5076.14	1.9700	1.654	12.922	0.454	0.236	0.96223
5102.04	1.9600	1.633	12.855	0.449	0.234	0.96230
5128.20	1.9500	1.618	12.786	0.445	0.231	0.96225
5154.64	1.9400	1.604	12.718	0.440	0.229	0.96217
5181.35	1.9300	1.591	12.654	0.436	0.227	0.96210
5208.33	1.9200	1.576	12.588	0.432	0.225	0.96206
5235.60	1.9100	1.562	12.524	0.427	0.223	0.96200
5263.16	1.9000	1.547	12.459	0.423	0.221	0.96198
5291.00	1.8900	1.532	12.396	0.419	0.219	0.96195
5319.15	1.8800	1.517	12.332	0.415	0.217	0.96195
5347.59	1.8700	1.500	12.267	0.410	0.215	0.96195
5376.34	1.8600	1.484	12.202	0.406	0.213	0.96195
5405.40	1.8500	1.468	12.135	0.402	0.211	0.96195
5434.78	1.8400	1.452	12.068	0.397	0.209	0.96195
5464.48	1.8300	1.437	12.000	0.393	0.207	0.96190

WN	WL	N	K	DN	DK	R
5494.50	1.8200	1.423	11.931	0.389	0.205	0.96184
5524.86	1.8100	1.410	11.863	0.384	0.203	0.96174
5555.56	1.8000	1.398	11.796	0.380	0.201	0.96164
5586.59	1.7900	1.386	11.730	0.376	0.199	0.96155
5617.98	1.7800	1.372	11.662	0.372	0.197	0.96149
5649.72	1.7700	1.360	11.593	0.368	0.195	0.96138
5681.82	1.7600	1.350	11.523	0.363	0.193	0.96121
5714.29	1.7500	1.342	11.456	0.359	0.192	0.96099
5747.13	1.7400	1.335	11.390	0.355	0.190	0.96076
5780.35	1.7300	1.326	11.328	0.352	0.189	0.96060
5813.95	1.7200	1.315	11.266	0.348	0.187	0.96050
5847.95	1.7100	1.302	11.203	0.344	0.185	0.96045
5882.35	1.7000	1.288	11.138	0.340	0.184	0.96040
5917.16	1.6900	1.276	11.073	0.336	0.182	0.96032
5952.38	1.6800	1.264	11.008	0.333	0.180	0.96023
5988.02	1.6700	1.252	10.943	0.329	0.178	0.96012
6024.10	1.6600	1.240	10.879	0.325	0.177	0.96004
6060.61	1.6500	1.228	10.814	0.321	0.175	0.95996
6097.56	1.6400	1.214	10.751	0.318	0.173	0.95995
6134.97	1.6300	1.199	10.686	0.314	0.172	0.95995
6172.84	1.6200	1.184	10.619	0.310	0.170	0.95995
6211.18	1.6100	1.171	10.552	0.306	0.168	0.95990
6250.00	1.6000	1.158	10.483	0.302	0.166	0.95983
6289.31	1.5900	1.146	10.415	0.299	0.164	0.95972
6329.11	1.5800	1.135	10.347	0.295	0.163	0.95959
6369.43	1.5700	1.124	10.280	0.291	0.161	0.95947
6410.26	1.5600	1.113	10.213	0.287	0.160	0.95933
6451.61	1.5500	1.102	10.146	0.284	0.158	0.95920
6493.51	1.5400	1.091	10.080	0.280	0.156	0.95909
6535.95	1.5300	1.079	10.014	0.277	0.155	0.95900
6578.95	1.5200	1.067	9.946	0.273	0.153	0.95891
6622.52	1.5100	1.055	9.878	0.270	0.152	0.95882
6666.67	1.5000	1.044	9.810	0.266	0.150	0.95867
6711.41	1.4900	1.034	9.742	0.262	0.149	0.95851
6756.76	1.4800	1.024	9.675	0.259	0.147	0.95835
6802.72	1.4700	1.013	9.609	0.255	0.146	0.95823
6849.31	1.4600	1.001	9.542	0.252	0.144	0.95813
6896.55	1.4500	0.989	9.474	0.249	0.142	0.95803
6944.44	1.4400	0.978	9.405	0.245	0.141	0.95791
6993.01	1.4300	0.968	9.335	0.242	0.139	0.95775
7042.25	1.4200	0.958	9.265	0.238	0.138	0.95754
7092.20	1.4100	0.950	9.196	0.235	0.136	0.95728
7142.86	1.4000	0.942	9.128	0.231	0.135	0.95701
7194.25	1.3900	0.934	9.061	0.228	0.134	0.95674
7246.38	1.3800	0.926	8.994	0.225	0.132	0.95649
7299.27	1.3700	0.917	8.928	0.222	0.131	0.95627
7352.94	1.3600	0.908	8.861	0.219	0.130	0.95608
7407.41	1.3500	0.898	8.795	0.216	0.128	0.95591
7462.69	1.3400	0.888	8.728	0.212	0.127	0.95573
7518.80	1.3300	0.878	8.662	0.209	0.126	0.95558

WN	WL	N	K	DN	DK	R
7575.76	1.3200	0.867	8.595	0.206	0.124	0.95545
7633.59	1.3100	0.856	8.528	0.203	0.123	0.95534
7692.31	1.3000	0.844	8.459	0.200	0.121	0.95523
7751.94	1.2900	0.834	8.390	0.197	0.120	0.95508
7812.50	1.2800	0.823	8.320	0.194	0.118	0.95491
7874.02	1.2700	0.813	8.251	0.191	0.117	0.95471
7936.51	1.2600	0.803	8.182	0.188	0.116	0.95452
8000.00	1.2500	0.793	8.112	0.185	0.114	0.95434
8064.52	1.2400	0.783	8.040	0.181	0.113	0.95413
8130.08	1.2300	0.775	7.967	0.178	0.112	0.95377
8196.72	1.2200	0.770	7.895	0.175	0.110	0.95325
8264.46	1.2100	0.766	7.826	0.172	0.109	0.95270
8333.33	1.2000	0.761	7.760	0.170	0.108	0.95226
8403.36	1.1900	0.752	7.694	0.167	0.107	0.95198
8474.58	1.1800	0.743	7.627	0.164	0.106	0.95176
8547.01	1.1700	0.733	7.557	0.161	0.104	0.95151
8620.69	1.1600	0.726	7.487	0.159	0.103	0.95114
8695.65	1.1500	0.718	7.419	0.156	0.102	0.95076
8771.93	1.1400	0.711	7.351	0.153	0.101	0.95040
8849.56	1.1300	0.702	7.283	0.150	0.099	0.95012
8928.57	1.1200	0.693	7.214	0.148	0.098	0.94986
9009.01	1.1100	0.684	7.144	0.145	0.097	0.94955
9090.91	1.1000	0.675	7.074	0.142	0.096	0.94923
9174.31	1.0900	0.667	7.004	0.140	0.094	0.94888
9259.26	1.0800	0.658	6.933	0.137	0.093	0.94852
9345.79	1.0700	0.650	6.862	0.134	0.092	0.94815
9433.96	1.0600	0.642	6.792	0.132	0.091	0.94772
9523.81	1.0500	0.635	6.720	0.129	0.090	0.94725
9615.38	1.0400	0.628	6.649	0.127	0.088	0.94670
9708.74	1.0300	0.622	6.578	0.124	0.087	0.94614
9803.92	1.0200	0.616	6.507	0.122	0.086	0.94554
9900.99	1.0100	0.610	6.437	0.119	0.085	0.94494
10000.00	1.0000	0.603	6.367	0.117	0.084	0.94438
10101.01	0.9900	0.596	6.298	0.115	0.083	0.94388
10204.08	0.9800	0.588	6.228	0.112	0.082	0.94340
10309.28	0.9700	0.580	6.158	0.110	0.081	0.94295
10416.67	0.9600	0.572	6.087	0.108	0.079	0.94250
10526.32	0.9500	0.563	6.016	0.105	0.078	0.94203
10638.30	0.9400	0.555	5.944	0.103	0.077	0.94157
10752.69	0.9300	0.546	5.870	0.101	0.076	0.94109
10869.56	0.9200	0.538	5.797	0.098	0.075	0.94052
10989.01	0.9100	0.531	5.724	0.096	0.074	0.93989
11111.11	0.9000	0.523	5.650	0.094	0.073	0.93928
11235.95	0.8900	0.515	5.575	0.091	0.071	0.93867
11363.64	0.8800	0.507	5.500	0.089	0.070	0.93799
11494.25	0.8700	0.500	5.423	0.087	0.069	0.93719
11627.91	0.8600	0.494	5.346	0.085	0.068	0.93624
11764.71	0.8500	0.490	5.269	0.082	0.067	0.93509
11904.76	0.8400	0.486	5.192	0.080	0.066	0.93377
12048.19	0.8300	0.483	5.115	0.078	0.065	0.93230



WN	WL	N	K	DN	DK	R
12195.12	0.8200	0.481	5.039	0.076	0.064	0.93072
12345.68	0.8100	0.478	4.965	0.074	0.063	0.92923
12500.00	0.8000	0.473	4.890	0.072	0.062	0.92787
12658.23	0.7900	0.469	4.814	0.070	0.061	0.92642
12820.51	0.7800	0.464	4.737	0.068	0.060	0.92500
12987.01	0.7700	0.460	4.657	0.066	0.059	0.92323
13157.89	0.7600	0.458	4.579	0.065	0.058	0.92111
13333.33	0.7500	0.457	4.501	0.063	0.057	0.91879
13513.51	0.7400	0.455	4.424	0.061	0.056	0.91665
13698.63	0.7300	0.452	4.346	0.059	0.055	0.91449
13888.89	0.7200	0.450	4.266	0.057	0.054	0.91197
14084.51	0.7100	0.448	4.186	0.056	0.053	0.90924
14285.71	0.7000	0.446	4.106	0.054	0.052	0.90640
14492.75	0.6900	0.445	4.025	0.052	0.051	0.90335
14705.88	0.6800	0.444	3.943	0.050	0.050	0.90003
14925.37	0.6700	0.444	3.860	0.049	0.049	0.89613
15151.51	0.6600	0.445	3.778	0.047	0.048	0.89197
15384.62	0.6500	0.444	3.695	0.046	0.047	0.88778
15625.00	0.6400	0.444	3.609	0.044	0.046	0.88321
15873.02	0.6300	0.445	3.522	0.042	0.045	0.87784
16129.03	0.6200	0.449	3.434	0.041	0.043	0.87165
16393.44	0.6100	0.452	3.345	0.039	0.042	0.86501
16666.67	0.6000	0.455	3.253	0.038	0.041	0.85759
16949.15	0.5900	0.460	3.159	0.036	0.040	0.84914
17241.38	0.5800	0.468	3.059	0.035	0.039	0.83982
17543.86	0.5700	0.484	2.958	0.034	0.038	0.82449
17857.14	0.5600	0.505	2.840	0.032	0.037	0.80789
18181.82	0.5500	0.527	2.765	0.031	0.036	0.78996
18518.52	0.5400	0.549	2.668	0.030	0.035	0.77092
18867.92	0.5300	0.573	2.568	0.029	0.034	0.74897
19230.77	0.5200	0.602	2.464	0.028	0.033	0.72300
19607.84	0.5100	0.639	2.358	0.027	0.031	0.69187
20000.00	0.5000	0.686	2.250	0.026	0.030	0.65493
20408.16	0.4900	0.745	2.145	0.026	0.029	0.61252
20833.33	0.4800	0.816	2.046	0.025	0.027	0.56616
21276.60	0.4700	0.900	1.957	0.025	0.026	0.51856
21739.13	0.4600	0.994	1.883	0.025	0.024	0.47386
22222.22	0.4500	1.094	1.829	0.024	0.023	0.43655
22727.27	0.4400	1.191	1.797	0.024	0.022	0.40932
23255.81	0.4300	1.278	1.784	0.024	0.021	0.39214
23809.52	0.4200	1.350	1.786	0.024	0.021	0.38275
24390.24	0.4100	1.405	1.794	0.024	0.021	0.37843
25000.00	0.4000	1.445	1.805	0.024	0.021	0.37679
25641.03	0.3900	1.471	1.813	0.024	0.021	0.37605
26315.79	0.3800	1.487	1.818	0.024	0.021	0.37584
27027.03	0.3700	1.497	1.818	0.024	0.021	0.37502
27777.78	0.3600	1.503	1.815	0.024	0.021	0.37377
28571.43	0.3500	1.504	1.815	0.024	0.021	0.37345
29411.76	0.3400	1.494	1.815	0.024	0.021	0.37434
30303.03	0.3300	1.473	1.807	0.024	0.021	0.37454

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.446	1.789	0.024	0.021	0.37273
32258.06	0.3100	1.419	1.764	0.023	0.020	0.36929
33333.33	0.3000	1.388	1.731	0.023	0.020	0.36433
34482.76	0.2900	1.358	1.688	0.022	0.019	0.35667
35714.29	0.2800	1.336	1.637	0.022	0.018	0.34590
37037.04	0.2700	1.323	1.586	0.021	0.018	0.33377
38461.54	0.2600	1.315	1.544	0.020	0.017	0.32329
40000.00	0.2500	1.301	1.512	0.020	0.016	0.31622
41666.67	0.2400	1.271	1.482	0.020	0.016	0.31141
43478.26	0.2300	1.227	1.442	0.019	0.016	0.30537
45454.55	0.2200	1.179	1.381	0.018	0.015	0.29401
47619.05	0.2100	1.140	1.314	0.018	0.014	0.27949

## 5.9 Graphites

The measured reflectance and computed spectral values of  $n$  and  $k$  for the 13mm dia. pellets of the four graphite powders are presented graphically in the following figures:

Dixon KS-2	Figs. 69-72,
Dixon HPN-2	Figs. 74-77,
Dixon 200-10	Figs. 79-82, and
Asbury Micro 260	Figs. 84-87.

The measured reflectance and computed spectral values of  $n$  and  $k$  are also presented immediately after the graphs for each material in the following pages.

The first derivative of the infrared reflectance spectra of the graphite pellets are presented in Figs. 73, 78, 83, and 88. The first derivative spectra for KS-2, HPN-2, and 200-10 graphites show a  $\text{CO}_2$  band at about  $2350\text{ cm}^{-1}$  which is not seen in the first derivative spectrum for Micro 260. All first derivative spectra of the graphites show a band at about  $1580\text{ cm}^{-1}$  which has not been assigned but does occur at frequency corresponding to the skeletal ring breathing modes in aromatic compounds. There also is a feature at about  $1997\text{ cm}^{-1}$  in the first derivative spectra of these for graphites.

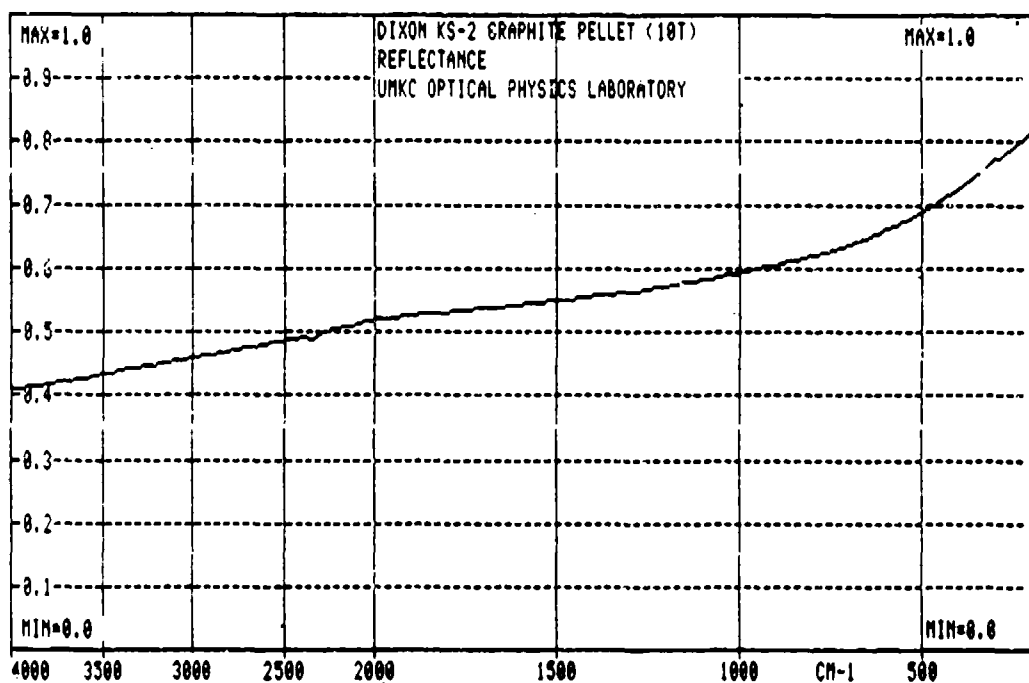


Figure 69. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of the Dixon KS-2 graphite pellet.

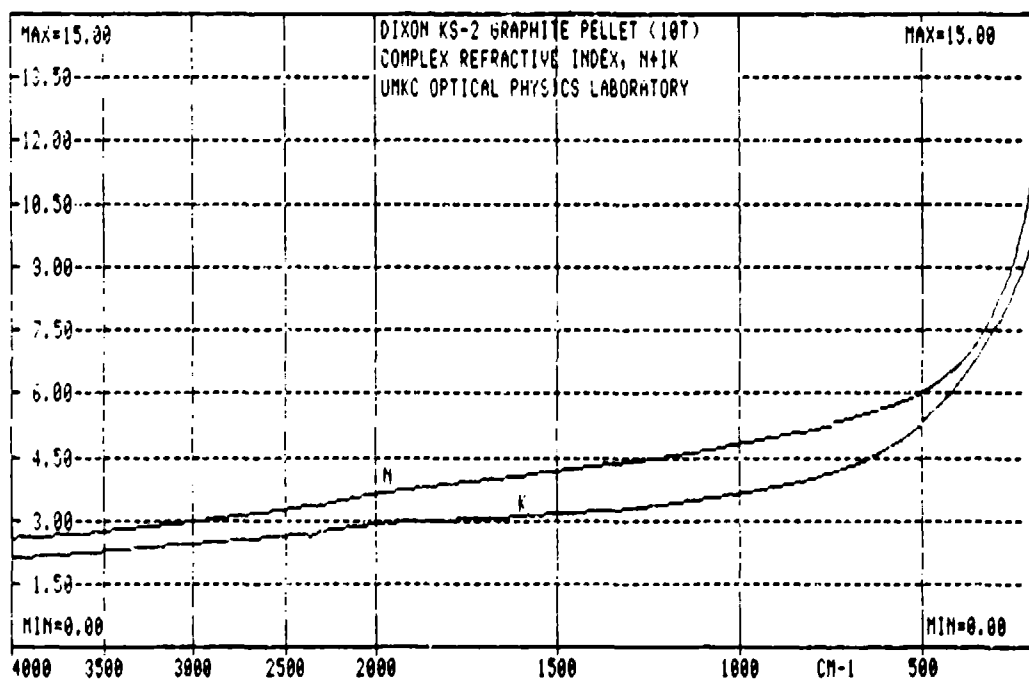


Figure 70. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for the Dixon KS-2 graphite pellet.

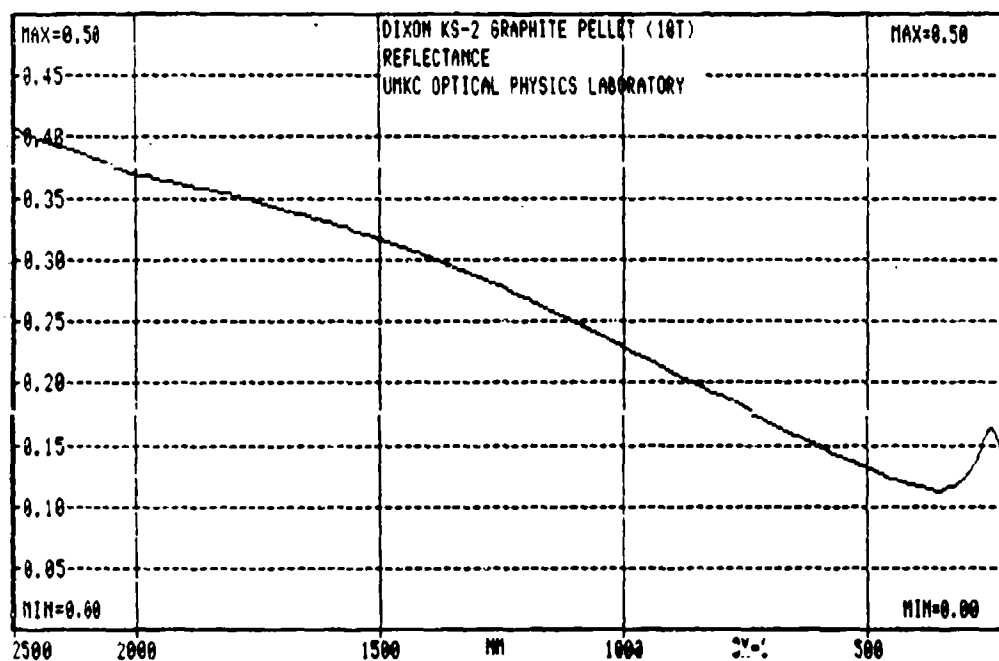


Figure 71. The uv-vis-nir (2,500-200 nm) reflectance spectrum of the Dixon KS-2 graphite pellet.

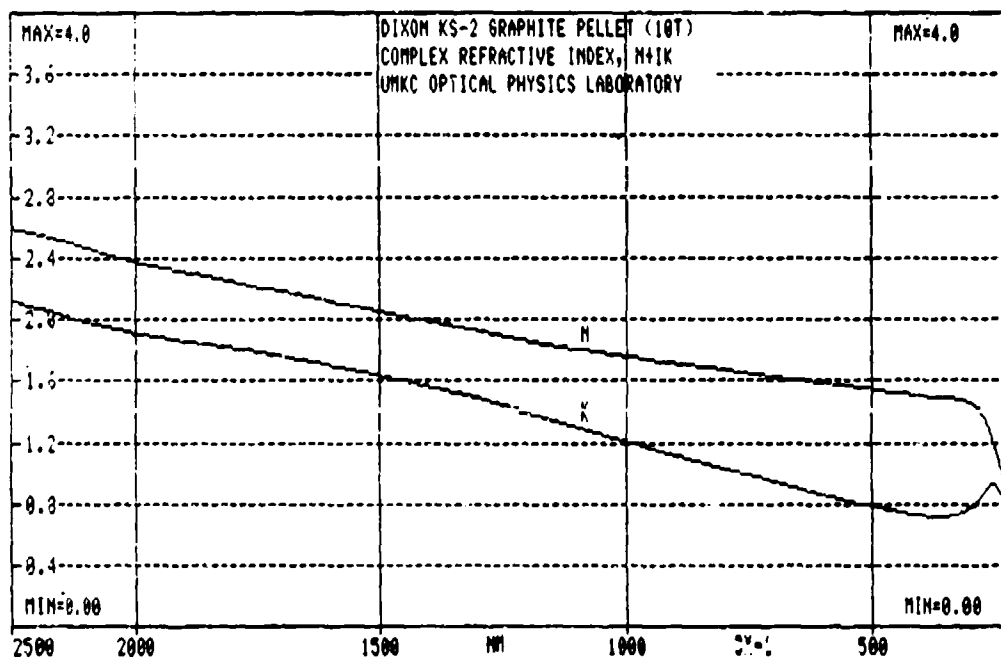


Figure 72. The uv-vis-nir (2,500-210 nm) complex refractive indices n and k for the Dixon KS-2 graphite pellet.

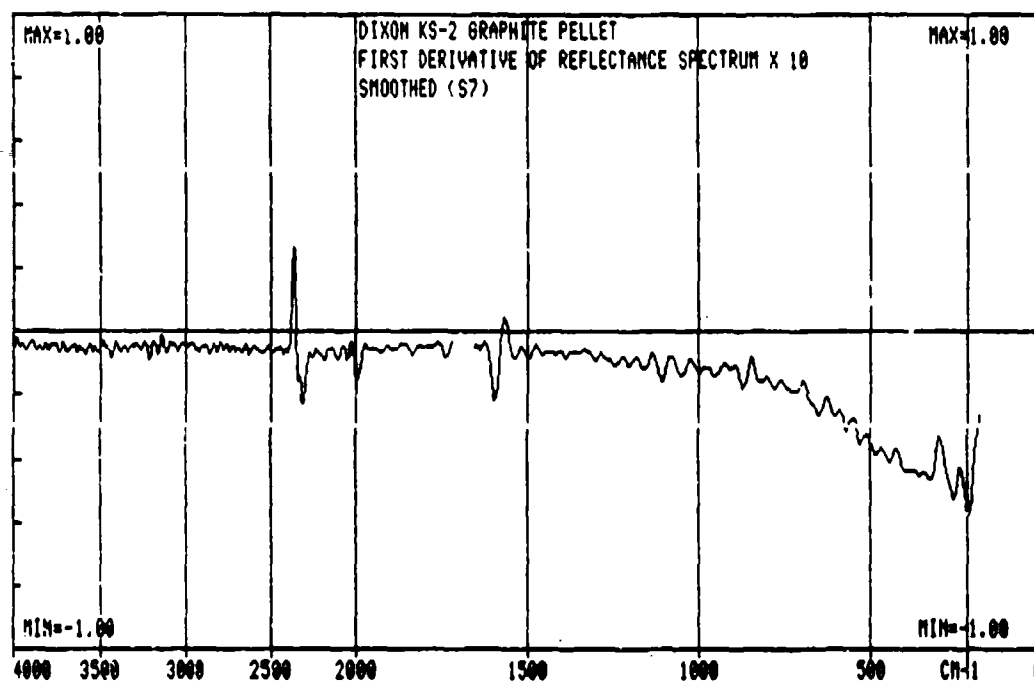


Figure 73. The first derivative of the infrared reflectance spectrum of the Dixon KS-2 graphite pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	12.972	9.768	0.854	1.415	0.82250
190.00	52.6316	12.172	9.771	0.770	1.323	0.82004
200.00	50.0000	11.393	9.614	0.689	1.200	0.81583
210.00	47.6190	10.808	9.430	0.634	1.105	0.81177
220.00	45.4545	10.256	9.141	0.588	1.009	0.80601
230.00	43.4783	9.937	8.853	0.566	0.948	0.80041
240.00	41.6667	9.608	8.714	0.539	0.896	0.79724
250.00	40.0000	9.220	8.502	0.510	0.833	0.79252
260.00	38.4615	8.938	8.265	0.492	0.784	0.78723
270.00	37.0370	8.712	8.068	0.478	0.746	0.78264
280.00	35.7143	8.495	7.897	0.464	0.711	0.77847
290.00	34.4828	8.307	7.717	0.453	0.681	0.77396
300.00	33.3333	8.146	7.612	0.442	0.656	0.77117
310.00	32.2581	7.909	7.502	0.425	0.623	0.76809
320.00	31.2500	7.699	7.334	0.413	0.591	0.76347
330.00	30.3030	7.545	7.177	0.404	0.568	0.75899
340.00	29.4118	7.384	7.040	0.394	0.544	0.75495
350.00	28.5714	7.242	6.881	0.387	0.523	0.75012
360.00	27.7778	7.117	6.754	0.380	0.505	0.74611
370.00	27.0270	6.991	6.620	0.373	0.487	0.74175
380.00	26.3158	6.888	6.490	0.367	0.472	0.73741
390.00	25.6410	6.783	6.372	0.361	0.458	0.73330
400.00	25.0000	6.690	6.252	0.356	0.445	0.72906
410.00	24.3902	6.611	6.135	0.352	0.434	0.72482
420.00	23.8095	6.537	6.033	0.348	0.424	0.72100
430.00	23.2558	6.461	5.946	0.343	0.414	0.71761
440.00	22.7273	6.372	5.853	0.338	0.402	0.71391
450.00	22.2222	6.306	5.748	0.334	0.394	0.70971
460.00	21.7391	6.253	5.663	0.331	0.387	0.70622
470.00	21.2766	6.182	5.581	0.327	0.378	0.70269
480.00	20.8333	6.124	5.490	0.324	0.370	0.69880
490.00	20.4082	6.068	5.410	0.320	0.363	0.69528
500.00	20.0000	6.023	5.326	0.317	0.357	0.69154
510.00	19.6078	5.981	5.261	0.315	0.352	0.68857
520.00	19.2308	5.926	5.193	0.311	0.346	0.68536
530.00	18.8679	5.884	5.115	0.309	0.340	0.68169
540.00	18.5185	5.848	5.049	0.306	0.336	0.67854
550.00	18.1818	5.817	4.984	0.304	0.332	0.67542
560.00	17.8571	5.781	4.936	0.302	0.328	0.67303
570.00	17.5439	5.738	4.874	0.299	0.323	0.66986
580.00	17.2414	5.708	4.813	0.296	0.319	0.66677
590.00	16.9492	5.681	4.762	0.295	0.316	0.66417
600.00	16.6667	5.652	4.719	0.293	0.312	0.66187
610.00	16.3934	5.614	4.664	0.290	0.308	0.65895
620.00	16.1290	5.596	4.616	0.288	0.306	0.65642
630.00	15.8730	5.572	4.579	0.287	0.303	0.65442
640.00	15.6250	5.535	4.544	0.284	0.299	0.65236
650.00	15.3846	5.501	4.491	0.282	0.295	0.64937
660.00	15.1515	5.480	4.449	0.280	0.293	0.64706
670.00	14.9254	5.457	4.405	0.278	0.290	0.64457

WN	WL	N	K	DN	DK	R
680.00	14.7059	5.441	4.365	0.277	0.288	0.64233
690.00	14.4928	5.422	4.328	0.275	0.286	0.64026
700.00	14.2857	5.408	4.301	0.274	0.284	0.63869
710.00	14.0845	5.381	4.279	0.273	0.282	0.63723
720.00	13.8889	5.352	4.243	0.270	0.278	0.63496
730.00	13.6986	5.336	4.211	0.269	0.277	0.63311
740.00	13.5135	5.311	4.186	0.268	0.274	0.63146
750.00	13.3333	5.291	4.152	0.266	0.272	0.62939
760.00	13.1579	5.275	4.125	0.265	0.270	0.62773
770.00	12.9870	5.255	4.103	0.263	0.268	0.62630
780.00	12.8205	5.228	4.077	0.262	0.266	0.62448
790.00	12.6582	5.211	4.046	0.260	0.264	0.62256
800.00	12.5000	5.196	4.026	0.259	0.262	0.62124
810.00	12.3457	5.177	4.001	0.258	0.260	0.61958
820.00	12.1951	5.158	3.978	0.256	0.258	0.61804
830.00	12.0482	5.140	3.954	0.255	0.257	0.61646
840.00	11.9048	5.126	3.933	0.254	0.255	0.61503
850.00	11.7647	5.116	3.917	0.253	0.254	0.61396
860.00	11.6279	5.099	3.913	0.252	0.253	0.61348
870.00	11.4943	5.059	3.888	0.250	0.249	0.61152
880.00	11.3636	5.049	3.854	0.249	0.248	0.60936
890.00	11.2360	5.035	3.842	0.248	0.247	0.60845
900.00	11.1111	5.019	3.825	0.247	0.245	0.60723
910.00	10.9890	5.003	3.807	0.246	0.243	0.60594
920.00	10.8696	4.986	3.794	0.245	0.242	0.60488
930.00	10.7527	4.969	3.779	0.244	0.240	0.60372
940.00	10.6383	4.948	3.770	0.243	0.239	0.60285
950.00	10.5263	4.924	3.749	0.241	0.237	0.60128
960.00	10.4167	4.911	3.732	0.240	0.235	0.60003
970.00	10.3093	4.892	3.716	0.239	0.234	0.59871
980.00	10.2041	4.878	3.700	0.238	0.232	0.59755
990.00	10.1010	4.859	3.686	0.237	0.231	0.59637
1000.00	10.0000	4.843	3.670	0.236	0.229	0.59513
1010.00	9.9010	4.825	3.653	0.235	0.228	0.59378
1020.00	9.8039	4.814	3.638	0.234	0.227	0.59267
1030.00	9.7087	4.798	3.630	0.233	0.225	0.59185
1040.00	9.6154	4.779	3.620	0.232	0.224	0.59092
1050.00	9.5238	4.758	3.601	0.231	0.222	0.58937
1060.00	9.4340	4.745	3.585	0.230	0.221	0.58813
1070.00	9.3458	4.729	3.569	0.229	0.219	0.58687
1080.00	9.2593	4.723	3.558	0.228	0.219	0.58601
1090.00	9.1743	4.703	3.553	0.227	0.217	0.58538
1100.00	9.0909	4.684	3.538	0.226	0.215	0.58407
1110.00	9.0090	4.664	3.523	0.225	0.214	0.58274
1120.00	8.9286	4.651	3.501	0.224	0.213	0.58103
1130.00	8.8496	4.647	3.490	0.223	0.212	0.58027
1140.00	8.7719	4.634	3.486	0.223	0.211	0.57974
1150.00	8.6957	4.612	3.474	0.222	0.209	0.57859
1160.00	8.6207	4.600	3.457	0.221	0.208	0.57723
1170.00	8.5470	4.588	3.449	0.220	0.207	0.57644



WN	WL	N	K	DN	DK	R
1180.00	8.4746	4.576	3.437	0.219	0.206	0.57542
1190.00	8.4034	4.564	3.427	0.219	0.205	0.57453
1200.00	8.3333	4.547	3.417	0.218	0.204	0.57360
1210.00	8.2645	4.533	3.401	0.217	0.203	0.57223
1220.00	8.1967	4.528	3.391	0.216	0.202	0.57146
1230.00	8.1301	4.511	3.389	0.216	0.201	0.57096
1240.00	8.0645	4.494	3.370	0.214	0.199	0.56936
1250.00	8.0000	4.490	3.361	0.214	0.199	0.56862
1260.00	7.9365	4.473	3.352	0.213	0.198	0.56774
1270.00	7.8740	4.465	3.336	0.212	0.197	0.56646
1280.00	7.8125	4.457	3.333	0.212	0.196	0.56604
1290.00	7.7519	4.443	3.324	0.211	0.195	0.56515
1300.00	7.6923	4.433	3.314	0.211	0.194	0.56426
1310.00	7.6336	4.423	3.306	0.210	0.194	0.56352
1320.00	7.5758	4.412	3.296	0.209	0.193	0.56261
1330.00	7.5188	4.406	3.291	0.209	0.192	0.56209
1340.00	7.4627	4.393	3.285	0.208	0.191	0.56146
1350.00	7.4074	4.382	3.279	0.208	0.190	0.56083
1360.00	7.3529	4.370	3.273	0.207	0.190	0.56014
1370.00	7.2993	4.359	3.268	0.207	0.189	0.55957
1380.00	7.2464	4.345	3.261	0.206	0.188	0.55880
1390.00	7.1942	4.334	3.255	0.205	0.187	0.55813
1400.00	7.1429	4.322	3.246	0.205	0.186	0.55723
1410.00	7.0922	4.313	3.240	0.204	0.185	0.55666
1420.00	7.0423	4.298	3.235	0.204	0.184	0.55600
1430.00	6.9930	4.288	3.226	0.203	0.183	0.55512
1440.00	6.9444	4.280	3.223	0.203	0.183	0.55473
1450.00	6.8966	4.264	3.218	0.202	0.181	0.55401
1460.00	6.8493	4.256	3.207	0.201	0.181	0.55305
1470.00	6.8027	4.247	3.204	0.201	0.180	0.55271
1480.00	6.7568	4.234	3.201	0.200	0.179	0.55222
1490.00	6.7114	4.220	3.194	0.200	0.178	0.55137
1500.00	6.6667	4.208	3.188	0.199	0.177	0.55071
1510.00	6.6225	4.198	3.180	0.199	0.176	0.54989
1520.00	6.5789	4.189	3.174	0.198	0.176	0.54931
1530.00	6.5359	4.177	3.173	0.198	0.175	0.54896
1540.00	6.4935	4.162	3.162	0.197	0.174	0.54783
1550.00	6.4516	4.162	3.154	0.197	0.174	0.54719
1560.00	6.4103	4.155	3.156	0.196	0.173	0.54724
1570.00	6.3694	4.145	3.161	0.196	0.172	0.54741
1580.00	6.3291	4.125	3.171	0.196	0.171	0.54782
1590.00	6.2893	4.085	3.162	0.194	0.168	0.54643
1600.00	6.2500	4.069	3.129	0.193	0.167	0.54346
1610.00	6.2112	4.073	3.115	0.193	0.167	0.54246
1620.00	6.1728	4.068	3.113	0.192	0.167	0.54217
1630.00	6.1350	4.059	3.105	0.192	0.166	0.54139
1640.00	6.0976	4.054	3.103	0.192	0.166	0.54109
1650.00	6.0606	4.040	3.099	0.191	0.165	0.54050
1660.00	6.0241	4.034	3.095	0.191	0.164	0.54007
1670.00	5.9880	4.019	3.090	0.190	0.163	0.53941

WN	WL	N	K	DN	DK	R
1680.00	5.9524	4.013	3.082	0.190	0.163	0.53862
1690.00	5.9172	4.001	3.081	0.189	0.162	0.53834
1700.00	5.8824	3.991	3.071	0.189	0.161	0.53732
1710.00	5.8480	3.986	3.069	0.188	0.161	0.53708
1720.00	5.8140	3.973	3.069	0.188	0.160	0.53682
1730.00	5.7803	3.959	3.065	0.187	0.159	0.53618
1740.00	5.7471	3.948	3.055	0.187	0.158	0.53521
1750.00	5.7143	3.944	3.051	0.186	0.157	0.53474
1760.00	5.6818	3.935	3.050	0.186	0.157	0.53453
1770.00	5.6497	3.922	3.046	0.186	0.156	0.53393
1780.00	5.6180	3.913	3.040	0.185	0.155	0.53327
1790.00	5.5866	3.902	3.040	0.185	0.154	0.53307
1800.00	5.5556	3.890	3.034	0.184	0.154	0.53238
1810.00	5.5249	3.882	3.030	0.184	0.153	0.53184
1820.00	5.4945	3.869	3.028	0.184	0.152	0.53146
1830.00	5.4645	3.856	3.022	0.183	0.151	0.53068
1840.00	5.4348	3.846	3.017	0.182	0.150	0.53011
1850.00	5.4054	3.838	3.010	0.182	0.150	0.52935
1860.00	5.3763	3.829	3.010	0.182	0.149	0.52919
1870.00	5.3476	3.817	3.006	0.181	0.148	0.52859
1880.00	5.3191	3.807	3.003	0.181	0.147	0.52822
1890.00	5.2910	3.793	3.000	0.180	0.146	0.52769
1900.00	5.2632	3.783	2.994	0.180	0.146	0.52696
1910.00	5.2356	3.773	2.991	0.180	0.145	0.52652
1920.00	5.2083	3.760	2.988	0.179	0.144	0.52602
1930.00	5.1813	3.748	2.982	0.179	0.143	0.52531
1940.00	5.1546	3.738	2.977	0.178	0.142	0.52466
1950.00	5.1282	3.726	2.974	0.178	0.142	0.52420
1960.00	5.1020	3.714	2.970	0.177	0.141	0.52361
1970.00	5.0761	3.702	2.965	0.177	0.140	0.52302
1980.00	5.0505	3.691	2.961	0.176	0.139	0.52241
1990.00	5.0251	3.672	2.959	0.176	0.138	0.52197
2000.00	5.0000	3.653	2.942	0.175	0.136	0.52011
2010.00	4.9751	3.650	2.928	0.174	0.136	0.51867
2020.00	4.9505	3.648	2.923	0.174	0.136	0.51816
2030.00	4.9261	3.639	2.921	0.173	0.135	0.51791
2040.00	4.9020	3.627	2.915	0.173	0.134	0.51710
2050.00	4.8780	3.616	2.907	0.172	0.134	0.51622
2060.00	4.8544	3.610	2.900	0.172	0.133	0.51537
2070.00	4.8309	3.604	2.899	0.172	0.133	0.51522
2080.00	4.8077	3.590	2.894	0.171	0.132	0.51456
2090.00	4.7847	3.581	2.887	0.171	0.131	0.51367
2100.00	4.7619	3.570	2.883	0.170	0.130	0.51311
2110.00	4.7393	3.562	2.872	0.170	0.130	0.51192
2120.00	4.7170	3.556	2.868	0.169	0.129	0.51143
2130.00	4.6948	3.547	2.863	0.169	0.129	0.51085
2140.00	4.6729	3.537	2.859	0.169	0.128	0.51031
2150.00	4.6512	3.528	2.853	0.168	0.127	0.50957
2160.00	4.6296	3.519	2.851	0.168	0.127	0.50921
2170.00	4.6083	3.506	2.845	0.167	0.126	0.50841

WN	WL	N	K	DN	DK	R
2180.00	4.5872	3.498	2.837	0.167	0.125	0.50747
2190.00	4.5662	3.488	2.828	0.166	0.125	0.50648
2200.00	4.5455	3.482	2.822	0.166	0.124	0.50575
2210.00	4.5249	3.471	2.817	0.166	0.123	0.50512
2220.00	4.5045	3.464	2.810	0.165	0.123	0.50421
2230.00	4.4843	3.456	2.806	0.165	0.122	0.50375
2240.00	4.4643	3.447	2.801	0.164	0.122	0.50308
2250.00	4.4444	3.437	2.796	0.164	0.121	0.50238
2260.00	4.4248	3.427	2.788	0.163	0.120	0.50142
2270.00	4.4053	3.419	2.782	0.163	0.120	0.50070
2280.00	4.3860	3.408	2.778	0.163	0.119	0.50016
2290.00	4.3666	3.393	2.772	0.162	0.118	0.49924
2300.00	4.3478	3.379	2.758	0.161	0.117	0.49763
2310.00	4.3290	3.366	2.746	0.160	0.116	0.49614
2320.00	4.3103	3.356	2.720	0.159	0.116	0.49332
2330.00	4.2918	3.361	2.701	0.159	0.116	0.49139
2340.00	4.2735	3.368	2.685	0.158	0.117	0.48986
2350.00	4.2553	3.367	2.678	0.158	0.117	0.48908
2360.00	4.2373	3.383	2.653	0.158	0.118	0.48677
2370.00	4.2194	3.417	2.669	0.159	0.120	0.48914
2380.00	4.2017	3.416	2.701	0.160	0.120	0.49232
2390.00	4.1841	3.392	2.715	0.160	0.118	0.49341
2400.00	4.1667	3.376	2.710	0.159	0.117	0.49255
2410.00	4.1494	3.366	2.708	0.159	0.117	0.49218
2420.00	4.1322	3.352	2.706	0.159	0.116	0.49177
2430.00	4.1152	3.343	2.698	0.158	0.115	0.49073
2440.00	4.0984	3.335	2.694	0.158	0.114	0.49019
2450.00	4.0816	3.328	2.690	0.158	0.114	0.48964
2460.00	4.0650	3.318	2.688	0.157	0.113	0.48927
2470.00	4.0486	3.311	2.682	0.157	0.113	0.48846
2480.00	4.0323	3.305	2.679	0.157	0.112	0.48811
2490.00	4.0161	3.295	2.674	0.156	0.112	0.48733
2500.00	4.0000	3.289	2.666	0.156	0.111	0.48639
2510.00	3.9841	3.283	2.664	0.156	0.111	0.48607
2520.00	3.9683	3.275	2.658	0.155	0.110	0.48532
2530.00	3.9526	3.269	2.654	0.155	0.110	0.48478
2540.00	3.9370	3.261	2.650	0.154	0.109	0.48421
2550.00	3.9216	3.254	2.644	0.154	0.109	0.48352
2560.00	3.9063	3.249	2.639	0.154	0.109	0.48281
2570.00	3.8911	3.244	2.634	0.154	0.108	0.48224
2580.00	3.8760	3.238	2.631	0.153	0.108	0.48180
2590.00	3.8610	3.231	2.626	0.153	0.107	0.48115
2600.00	3.8462	3.225	2.625	0.153	0.107	0.48087
2610.00	3.8314	3.217	2.620	0.152	0.106	0.48017
2620.00	3.8168	3.211	2.613	0.152	0.106	0.47933
2630.00	3.8023	3.208	2.607	0.152	0.106	0.47867
2640.00	3.7879	3.201	2.606	0.152	0.105	0.47836
2650.00	3.7736	3.193	2.602	0.151	0.105	0.47777
2660.00	3.7594	3.187	2.596	0.151	0.105	0.47706
2670.00	3.7453	3.184	2.593	0.151	0.104	0.47668

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.175	2.588	0.150	0.104	0.47598
2690.00	3.7175	3.171	2.583	0.150	0.103	0.47534
2700.00	3.7037	3.165	2.579	0.150	0.103	0.47476
2710.00	3.6900	3.161	2.576	0.150	0.103	0.47437
2720.00	3.6765	3.153	2.572	0.149	0.102	0.47382
2730.00	3.6630	3.148	2.567	0.149	0.102	0.47317
2740.00	3.6496	3.143	2.562	0.149	0.102	0.47251
2750.00	3.6364	3.139	2.561	0.148	0.101	0.47234
2760.00	3.6232	3.129	2.557	0.148	0.101	0.47167
2770.00	3.6101	3.127	2.550	0.148	0.101	0.47083
2780.00	3.5971	3.123	2.550	0.148	0.100	0.47076
2790.00	3.5842	3.114	2.547	0.147	0.100	0.47026
2800.00	3.5714	3.108	2.542	0.147	0.099	0.46957
2810.00	3.5587	3.102	2.538	0.147	0.099	0.46906
2820.00	3.5461	3.097	2.533	0.147	0.099	0.46842
2830.00	3.5336	3.092	2.529	0.146	0.098	0.46788
2840.00	3.5211	3.084	2.527	0.146	0.098	0.46747
2850.00	3.5088	3.078	2.519	0.146	0.097	0.46648
2860.00	3.4965	3.076	2.515	0.145	0.097	0.46594
2870.00	3.4843	3.070	2.511	0.145	0.097	0.46543
2880.00	3.4722	3.065	2.507	0.145	0.097	0.46488
2890.00	3.4602	3.061	2.505	0.145	0.096	0.46448
2900.00	3.4483	3.055	2.501	0.144	0.096	0.46400
2910.00	3.4364	3.050	2.496	0.144	0.096	0.46330
2920.00	3.4247	3.045	2.493	0.144	0.095	0.46289
2930.00	3.4130	3.039	2.488	0.144	0.095	0.46216
2940.00	3.4014	3.037	2.486	0.143	0.095	0.46184
2950.00	3.3898	3.031	2.482	0.143	0.095	0.46126
2960.00	3.3784	3.027	2.478	0.143	0.094	0.46072
2970.00	3.3670	3.022	2.477	0.143	0.094	0.46054
2980.00	3.3557	3.015	2.474	0.143	0.094	0.46014
2990.00	3.3445	3.011	2.469	0.142	0.093	0.45939
3000.00	3.3333	3.007	2.467	0.142	0.093	0.45914
3010.00	3.3223	3.000	2.464	0.142	0.093	0.45862
3020.00	3.3113	2.996	2.460	0.142	0.092	0.45808
3030.00	3.3003	2.991	2.459	0.141	0.092	0.45784
3040.00	3.2895	2.983	2.453	0.141	0.091	0.45708
3050.00	3.2787	2.979	2.450	0.141	0.091	0.45657
3060.00	3.2680	2.974	2.445	0.141	0.091	0.45596
3070.00	3.2573	2.971	2.442	0.140	0.091	0.45552
3080.00	3.2468	2.965	2.440	0.140	0.090	0.45518
3090.00	3.2362	2.960	2.436	0.140	0.090	0.45465
3100.00	3.2258	2.956	2.435	0.140	0.090	0.45441
3110.00	3.2154	2.947	2.430	0.140	0.089	0.45371
3120.00	3.2051	2.943	2.423	0.139	0.089	0.45277
3130.00	3.1949	2.942	2.421	0.139	0.089	0.45247
3140.00	3.1847	2.937	2.422	0.139	0.089	0.45246
3150.00	3.1746	2.929	2.420	0.139	0.088	0.45208
3160.00	3.1646	2.922	2.414	0.138	0.088	0.45126
3170.00	3.1546	2.918	2.409	0.138	0.087	0.45058

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.915	2.406	0.138	0.087	0.45013
3190.00	3.1348	2.909	2.406	0.138	0.087	0.45004
3200.00	3.1250	2.900	2.399	0.137	0.086	0.44906
3210.00	3.1153	2.895	2.395	0.137	0.086	0.44842
3220.00	3.1056	2.892	2.388	0.137	0.086	0.44749
3230.00	3.0960	2.891	2.387	0.137	0.086	0.44738
3240.00	3.0864	2.884	2.384	0.137	0.085	0.44698
3250.00	3.0769	2.880	2.380	0.136	0.085	0.44637
3260.00	3.0675	2.875	2.376	0.136	0.085	0.44574
3270.00	3.0581	2.871	2.373	0.136	0.085	0.44532
3280.00	3.0488	2.866	2.369	0.136	0.084	0.44479
3290.00	3.0395	2.863	2.368	0.135	0.084	0.44452
3300.00	3.0303	2.855	2.364	0.135	0.083	0.44397
3310.00	3.0211	2.853	2.360	0.135	0.083	0.44338
3320.00	3.0120	2.846	2.359	0.135	0.083	0.44312
3330.00	3.0030	2.841	2.354	0.135	0.083	0.44239
3340.00	2.9940	2.837	2.350	0.134	0.082	0.44183
3350.00	2.9851	2.832	2.346	0.134	0.082	0.44126
3360.00	2.9762	2.827	2.343	0.134	0.082	0.44077
3370.00	2.9674	2.823	2.339	0.134	0.082	0.44023
3380.00	2.9586	2.816	2.336	0.133	0.081	0.43965
3390.00	2.9499	2.814	2.330	0.133	0.081	0.43888
3400.00	2.9412	2.809	2.328	0.133	0.081	0.43848
3410.00	2.9326	2.806	2.324	0.133	0.081	0.43792
3420.00	2.9240	2.800	2.323	0.133	0.080	0.43771
3430.00	2.9155	2.794	2.318	0.132	0.080	0.43700
3440.00	2.9070	2.789	2.312	0.132	0.080	0.43618
3450.00	2.8986	2.786	2.307	0.132	0.079	0.43537
3460.00	2.8902	2.784	2.303	0.131	0.079	0.43490
3470.00	2.8818	2.779	2.301	0.131	0.079	0.43450
3480.00	2.8736	2.776	2.297	0.131	0.079	0.43396
3490.00	2.8653	2.774	2.295	0.131	0.079	0.43362
3500.00	2.8571	2.767	2.293	0.131	0.078	0.43329
3510.00	2.8490	2.760	2.287	0.130	0.078	0.43234
3520.00	2.8409	2.758	2.283	0.130	0.078	0.43186
3530.00	2.8329	2.754	2.281	0.130	0.077	0.43142
3540.00	2.8249	2.750	2.276	0.130	0.077	0.43067
3550.00	2.8169	2.745	2.272	0.130	0.077	0.43013
3560.00	2.8090	2.743	2.268	0.129	0.077	0.42956
3570.00	2.8011	2.739	2.267	0.129	0.077	0.42933
3580.00	2.7933	2.733	2.262	0.129	0.076	0.42853
3590.00	2.7855	2.729	2.258	0.129	0.076	0.42793
3600.00	2.7778	2.726	2.252	0.128	0.076	0.42716
3610.00	2.7701	2.724	2.250	0.128	0.076	0.42686
3620.00	2.7624	2.719	2.246	0.128	0.076	0.42618
3630.00	2.7548	2.716	2.242	0.128	0.075	0.42554
3640.00	2.7473	2.712	2.239	0.128	0.075	0.42508
3650.00	2.7397	2.711	2.236	0.128	0.075	0.42475
3660.00	2.7322	2.704	2.233	0.127	0.075	0.42412
3670.00	2.7248	2.703	2.227	0.127	0.075	0.42338

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.698	2.226	0.127	0.074	0.42312
3690.00	2.7100	2.694	2.220	0.127	0.074	0.42226
3700.00	2.7027	2.692	2.216	0.126	0.074	0.42159
3710.00	2.6954	2.691	2.215	0.126	0.074	0.42142
3720.00	2.6882	2.684	2.212	0.126	0.074	0.42098
3730.00	2.6810	2.682	2.205	0.126	0.074	0.41989
3740.00	2.6738	2.681	2.202	0.126	0.074	0.41959
3750.00	2.6667	2.677	2.202	0.126	0.073	0.41944
3760.00	2.6596	2.673	2.197	0.125	0.073	0.41867
3770.00	2.6525	2.673	2.195	0.125	0.073	0.41839
3780.00	2.6455	2.667	2.193	0.125	0.073	0.41808
3790.00	2.6385	2.664	2.187	0.125	0.073	0.41722
3800.00	2.6316	2.662	2.186	0.125	0.073	0.41697
3810.00	2.6247	2.657	2.184	0.125	0.072	0.41667
3820.00	2.6178	2.653	2.179	0.124	0.072	0.41588
3830.00	2.6110	2.651	2.175	0.124	0.072	0.41527
3840.00	2.6042	2.648	2.172	0.124	0.072	0.41486
3850.00	2.5974	2.644	2.170	0.124	0.072	0.41439
3860.00	2.5907	2.642	2.165	0.124	0.071	0.41367
3870.00	2.5840	2.639	2.162	0.123	0.071	0.41325
3880.00	2.5773	2.638	2.160	0.123	0.071	0.41287
3890.00	2.5707	2.634	2.158	0.123	0.071	0.41263
3900.00	2.5641	2.630	2.155	0.123	0.071	0.41215
3910.00	2.5575	2.627	2.153	0.123	0.071	0.41176
3920.00	2.5510	2.623	2.150	0.123	0.070	0.41119
3930.00	2.5445	2.620	2.145	0.122	0.070	0.41054
3940.00	2.5381	2.618	2.143	0.122	0.070	0.41012
3950.00	2.5316	2.615	2.140	0.122	0.070	0.40969
3960.00	2.5253	2.612	2.137	0.122	0.070	0.40914
3970.00	2.5189	2.609	2.133	0.122	0.070	0.40864
3980.00	2.5126	2.608	2.132	0.122	0.070	0.40847
3990.00	2.5063	2.602	2.132	0.122	0.069	0.40834
4000.00	2.5000	2.597	2.127	0.121	0.069	0.40759
4016.06	2.4900	2.592	2.120	0.121	0.069	0.40649
4032.26	2.4800	2.587	2.115	0.121	0.068	0.40565
4048.58	2.4700	2.581	2.107	0.120	0.068	0.40436
4065.04	2.4600	2.580	2.100	0.120	0.068	0.40339
4081.63	2.4500	2.577	2.096	0.120	0.068	0.40267
4098.36	2.4400	2.574	2.092	0.119	0.068	0.40199
4115.23	2.4300	2.570	2.088	0.119	0.068	0.40134
4132.23	2.4200	2.565	2.083	0.119	0.067	0.40056
4149.38	2.4100	2.561	2.078	0.119	0.067	0.39982
4166.67	2.4000	2.557	2.074	0.119	0.067	0.39909
4184.10	2.3900	2.553	2.070	0.118	0.067	0.39845
4201.68	2.3800	2.548	2.065	0.118	0.067	0.39771
4219.41	2.3700	2.544	2.061	0.118	0.066	0.39693
4237.29	2.3600	2.539	2.055	0.117	0.066	0.39607
4255.32	2.3500	2.535	2.051	0.117	0.066	0.39529
4273.50	2.3400	2.531	2.046	0.117	0.066	0.39455
4291.85	2.3300	2.527	2.042	0.117	0.066	0.39381

WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.523	2.037	0.116	0.065	0.39301
4329.00	2.3100	2.519	2.032	0.116	0.065	0.39219
4347.83	2.3000	2.515	2.028	0.116	0.065	0.39149
4366.81	2.2900	2.510	2.023	0.116	0.065	0.39073
4385.96	2.2800	2.506	2.018	0.115	0.065	0.38992
4405.29	2.2700	2.503	2.014	0.115	0.064	0.38914
4424.78	2.2600	2.500	2.009	0.115	0.064	0.38846
4444.44	2.2500	2.496	2.007	0.115	0.064	0.38794
4464.29	2.2400	2.491	2.003	0.115	0.064	0.38725
4484.30	2.2300	2.486	1.998	0.114	0.064	0.38649
4504.50	2.2200	2.482	1.994	0.114	0.063	0.38574
4524.89	2.2100	2.477	1.989	0.114	0.063	0.38499
4545.45	2.2000	2.473	1.985	0.114	0.063	0.38427
4566.21	2.1900	2.469	1.981	0.113	0.063	0.38353
4587.16	2.1800	2.465	1.977	0.113	0.062	0.38284
4608.29	2.1700	2.460	1.973	0.113	0.062	0.38221
4629.63	2.1600	2.456	1.969	0.113	0.062	0.38148
4651.16	2.1500	2.452	1.965	0.112	0.062	0.38082
4672.90	2.1400	2.447	1.962	0.112	0.062	0.38022
4694.84	2.1300	2.442	1.958	0.112	0.061	0.37955
4716.98	2.1200	2.438	1.955	0.112	0.061	0.37889
4739.34	2.1100	2.433	1.951	0.112	0.061	0.37824
4761.90	2.1000	2.428	1.947	0.111	0.060	0.37760
4784.69	2.0900	2.423	1.944	0.111	0.060	0.37692
4807.69	2.0800	2.417	1.940	0.111	0.060	0.37628
4830.92	2.0700	2.411	1.936	0.111	0.060	0.37554
4854.37	2.0600	2.406	1.932	0.110	0.059	0.37484
4878.05	2.0500	2.400	1.928	0.110	0.059	0.37411
4901.96	2.0400	2.395	1.924	0.110	0.059	0.37337
4926.11	2.0300	2.389	1.920	0.110	0.058	0.37252
4950.50	2.0200	2.384	1.915	0.109	0.058	0.37170
4975.12	2.0100	2.380	1.911	0.109	0.058	0.37089
5000.00	2.0000	2.374	1.909	0.109	0.057	0.37048
5025.13	1.9900	2.366	1.904	0.109	0.057	0.36963
5050.51	1.9800	2.361	1.899	0.108	0.057	0.36878
5076.14	1.9700	2.354	1.895	0.108	0.056	0.36792
5102.04	1.9600	2.349	1.890	0.108	0.056	0.36701
5128.21	1.9500	2.343	1.885	0.107	0.056	0.36617
5154.64	1.9400	2.337	1.881	0.107	0.056	0.36540
5181.35	1.9300	2.331	1.876	0.107	0.055	0.36451
5208.33	1.9200	2.325	1.872	0.107	0.055	0.36364
5235.60	1.9100	2.319	1.867	0.106	0.055	0.36271
5263.16	1.9000	2.314	1.862	0.106	0.054	0.36188
5291.01	1.8900	2.307	1.857	0.106	0.054	0.36090
5319.15	1.8800	2.302	1.851	0.105	0.054	0.35990
5347.59	1.8700	2.297	1.847	0.105	0.053	0.35903
5376.34	1.8600	2.293	1.843	0.105	0.053	0.35835
5405.41	1.8500	2.286	1.840	0.105	0.053	0.35779
5434.78	1.8400	2.279	1.836	0.104	0.052	0.35696
5464.48	1.8300	2.271	1.831	0.104	0.052	0.35599

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.265	1.825	0.104	0.052	0.35487
5524.86	1.8100	2.260	1.820	0.104	0.051	0.35395
5555.56	1.8000	2.253	1.817	0.103	0.051	0.35326
5586.59	1.7900	2.246	1.812	0.103	0.051	0.35237
5617.98	1.7800	2.238	1.807	0.103	0.050	0.35132
5649.72	1.7700	2.231	1.801	0.102	0.050	0.35028
5681.82	1.7600	2.224	1.795	0.102	0.050	0.34909
5714.29	1.7500	2.218	1.789	0.102	0.049	0.34800
5747.13	1.7400	2.211	1.784	0.101	0.049	0.34691
5780.35	1.7300	2.204	1.777	0.101	0.049	0.34568
5813.95	1.7200	2.198	1.771	0.101	0.048	0.34458
5847.95	1.7100	2.191	1.765	0.100	0.048	0.34345
5882.35	1.7000	2.185	1.760	0.100	0.048	0.34234
5917.16	1.6900	2.178	1.754	0.100	0.047	0.34117
5952.38	1.6800	2.172	1.747	0.099	0.047	0.33995
5988.02	1.6700	2.166	1.741	0.099	0.047	0.33875
6024.10	1.6600	2.160	1.735	0.099	0.046	0.33764
6060.61	1.6500	2.153	1.729	0.098	0.046	0.33646
6097.56	1.6400	2.146	1.723	0.098	0.046	0.33519
6134.97	1.6300	2.141	1.717	0.098	0.046	0.33407
6172.84	1.6200	2.134	1.711	0.097	0.045	0.33292
6211.18	1.6100	2.127	1.705	0.097	0.045	0.33169
6250.00	1.6000	2.120	1.698	0.097	0.045	0.33045
6289.31	1.5900	2.113	1.692	0.096	0.044	0.32910
6329.11	1.5800	2.108	1.685	0.096	0.044	0.32777
6369.43	1.5700	2.102	1.680	0.096	0.044	0.32676
6410.26	1.5600	2.095	1.673	0.095	0.043	0.32541
6451.61	1.5500	2.088	1.667	0.095	0.043	0.32412
6493.51	1.5400	2.081	1.659	0.094	0.043	0.32262
6535.93	1.5300	2.076	1.653	0.094	0.043	0.32140
6578.95	1.5200	2.068	1.647	0.094	0.042	0.32017
6622.52	1.5100	2.062	1.640	0.093	0.042	0.31875
6666.67	1.5000	2.054	1.632	0.093	0.042	0.31731
6711.41	1.4900	2.048	1.625	0.093	0.041	0.31582
6756.76	1.4800	2.042	1.619	0.092	0.041	0.31449
6802.72	1.4700	2.036	1.611	0.092	0.041	0.31301
6849.32	1.4600	2.029	1.604	0.091	0.041	0.31159
6896.55	1.4500	2.023	1.597	0.091	0.040	0.31015
6944.44	1.4400	2.016	1.590	0.091	0.040	0.30871
6993.01	1.4300	2.010	1.583	0.090	0.040	0.30722
7042.25	1.4200	2.004	1.575	0.090	0.039	0.30571
7092.20	1.4100	1.997	1.568	0.089	0.039	0.30424
7142.86	1.4000	1.991	1.561	0.089	0.039	0.30278
7194.24	1.3900	1.985	1.554	0.089	0.039	0.30125
7246.38	1.3800	1.978	1.547	0.088	0.038	0.29980
7299.27	1.3700	1.971	1.539	0.088	0.038	0.29820
7352.94	1.3600	1.965	1.531	0.087	0.038	0.29659
7407.41	1.3500	1.959	1.524	0.087	0.038	0.29500
7462.69	1.3400	1.952	1.516	0.087	0.037	0.29344
7518.80	1.3300	1.945	1.508	0.086	0.037	0.29173



WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.939	1.500	0.086	0.037	0.29009
7633.59	1.3100	1.933	1.493	0.085	0.037	0.28850
7692.31	1.3000	1.926	1.484	0.085	0.036	0.28672
7751.94	1.2900	1.920	1.476	0.085	0.036	0.28504
7812.50	1.2800	1.914	1.469	0.084	0.036	0.28339
7874.02	1.2700	1.907	1.460	0.084	0.036	0.28162
7936.51	1.2600	1.901	1.452	0.083	0.035	0.27987
8000.00	1.2500	1.895	1.444	0.083	0.035	0.27811
8064.52	1.2400	1.888	1.435	0.082	0.035	0.27628
8130.08	1.2300	1.883	1.427	0.082	0.035	0.27456
8196.72	1.2200	1.876	1.419	0.082	0.035	0.27275
8264.46	1.2100	1.870	1.410	0.081	0.034	0.27073
8333.33	1.2000	1.864	1.403	0.081	0.034	0.26924
8403.36	1.1900	1.856	1.393	0.080	0.034	0.26709
8474.58	1.1800	1.851	1.384	0.080	0.034	0.26513
8547.01	1.1700	1.845	1.375	0.079	0.034	0.26325
8620.69	1.1600	1.839	1.366	0.079	0.033	0.26124
8695.65	1.1500	1.834	1.356	0.078	0.033	0.25912
8771.93	1.1400	1.828	1.347	0.078	0.033	0.25723
8849.56	1.1300	1.822	1.338	0.077	0.033	0.25523
8928.57	1.1200	1.817	1.329	0.077	0.033	0.25315
9009.01	1.1100	1.812	1.320	0.076	0.033	0.25115
9090.91	1.1000	1.807	1.311	0.076	0.032	0.24922
9174.31	1.0900	1.801	1.302	0.075	0.032	0.24717
9259.26	1.0800	1.796	1.293	0.075	0.032	0.24520
9345.79	1.0700	1.791	1.283	0.074	0.032	0.24315
9433.96	1.0600	1.786	1.275	0.074	0.032	0.24120
9523.81	1.0500	1.781	1.266	0.074	0.032	0.23920
9615.38	1.0400	1.775	1.256	0.073	0.032	0.23712
9708.74	1.0300	1.771	1.247	0.073	0.032	0.23505
9803.92	1.0200	1.766	1.238	0.072	0.031	0.23300
9900.99	1.0100	1.761	1.228	0.072	0.031	0.23087
10000.00	1.0000	1.756	1.219	0.071	0.031	0.22880
10101.01	0.9900	1.751	1.210	0.071	0.031	0.22681
10204.08	0.9800	1.747	1.201	0.070	0.031	0.22474
10309.28	0.9700	1.742	1.191	0.070	0.031	0.22261
10416.67	0.9600	1.737	1.182	0.069	0.031	0.22058
10526.32	0.9500	1.733	1.173	0.069	0.031	0.21849
10638.30	0.9400	1.728	1.164	0.068	0.031	0.21642
10752.69	0.9300	1.724	1.154	0.068	0.031	0.21434
10869.57	0.9200	1.719	1.145	0.067	0.030	0.21211
10989.01	0.9100	1.716	1.135	0.067	0.030	0.20991
11111.11	0.9000	1.713	1.126	0.066	0.030	0.20802
11235.96	0.8900	1.708	1.118	0.066	0.030	0.20613
11363.64	0.8800	1.704	1.108	0.065	0.030	0.20397
11494.25	0.8700	1.701	1.099	0.065	0.030	0.20195
11627.91	0.8600	1.697	1.090	0.064	0.030	0.20005
11764.71	0.8500	1.694	1.083	0.064	0.030	0.19830
11904.76	0.8400	1.689	1.075	0.063	0.030	0.19644
12048.19	0.8300	1.686	1.066	0.063	0.030	0.19444

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.682	1.058	0.062	0.030	0.19273
12345.68	0.8100	1.678	1.049	0.062	0.030	0.19075
12500.00	0.8000	1.674	1.043	0.062	0.030	0.18937
12658.23	0.7900	1.668	1.036	0.061	0.029	0.18756
12820.51	0.7800	1.663	1.027	0.061	0.029	0.18549
12987.01	0.7700	1.658	1.018	0.060	0.029	0.18350
13157.89	0.7600	1.653	1.010	0.060	0.029	0.18143
13333.33	0.7500	1.648	1.000	0.059	0.029	0.17932
13513.51	0.7400	1.644	0.992	0.059	0.029	0.17735
13698.63	0.7300	1.639	0.983	0.058	0.028	0.17533
13888.89	0.7200	1.634	0.974	0.058	0.028	0.17325
14084.51	0.7100	1.630	0.965	0.057	0.028	0.17120
14285.71	0.7000	1.625	0.956	0.057	0.028	0.16914
14492.75	0.6900	1.621	0.947	0.056	0.028	0.16705
14705.88	0.6800	1.616	0.938	0.056	0.028	0.16498
14925.37	0.6700	1.612	0.928	0.055	0.028	0.16278
15151.52	0.6600	1.610	0.919	0.055	0.028	0.16089
15384.62	0.6500	1.607	0.912	0.054	0.028	0.15915
15625.00	0.6400	1.602	0.905	0.054	0.028	0.15754
15873.02	0.6300	1.597	0.895	0.053	0.027	0.15536
16129.03	0.6200	1.593	0.887	0.053	0.027	0.15343
16393.44	0.6100	1.589	0.878	0.052	0.027	0.15153
16666.67	0.6000	1.585	0.870	0.052	0.027	0.14972
16949.15	0.5900	1.581	0.863	0.051	0.027	0.14792
17241.38	0.5800	1.577	0.855	0.051	0.027	0.14619
17543.86	0.5700	1.572	0.846	0.050	0.027	0.14413
17857.14	0.5600	1.569	0.838	0.050	0.027	0.14222
18181.82	0.5500	1.566	0.831	0.049	0.026	0.14063
18518.52	0.5400	1.562	0.823	0.049	0.026	0.13897
18867.92	0.5300	1.558	0.816	0.049	0.026	0.13732
19230.77	0.5200	1.553	0.809	0.048	0.026	0.13574
19607.84	0.5100	1.549	0.802	0.048	0.026	0.13409
20000.00	0.5000	1.544	0.796	0.047	0.026	0.13255
20408.16	0.4900	1.539	0.790	0.047	0.026	0.13100
20833.33	0.4800	1.532	0.782	0.047	0.025	0.12910
21276.60	0.4700	1.528	0.773	0.046	0.025	0.12713
21739.13	0.4600	1.524	0.765	0.046	0.025	0.12537
22222.22	0.4500	1.520	0.758	0.045	0.025	0.12369
22727.27	0.4400	1.517	0.751	0.045	0.025	0.12207
23255.81	0.4300	1.514	0.745	0.044	0.025	0.12072
23809.52	0.4200	1.511	0.739	0.044	0.025	0.11955
24390.24	0.4100	1.508	0.736	0.044	0.024	0.11865
25000.00	0.4000	1.504	0.733	0.044	0.024	0.11780
25641.03	0.3900	1.499	0.729	0.043	0.024	0.11676
26315.79	0.3800	1.494	0.725	0.043	0.024	0.11563
27027.03	0.3700	1.490	0.721	0.043	0.024	0.11463
27777.78	0.3600	1.489	0.718	0.043	0.024	0.11407
28571.43	0.3500	1.489	0.719	0.043	0.024	0.11421
29411.76	0.3400	1.489	0.726	0.043	0.024	0.11560
30303.03	0.3300	1.482	0.737	0.044	0.023	0.11724

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.474	0.744	0.045	0.023	0.11822
32258.06	0.3100	1.469	0.758	0.045	0.022	0.12067
33333.33	0.3000	1.458	0.779	0.047	0.022	0.12452
34482.76	0.2900	1.441	0.806	0.048	0.020	0.12953
35714.29	0.2800	1.414	0.842	0.051	0.018	0.13646
37037.04	0.2700	1.367	0.886	0.053	0.014	0.14581
38461.54	0.2600	1.286	0.929	0.057	0.017	0.15716
40000.00	0.2500	1.166	0.936	0.060	0.025	0.16442
41666.67	0.2400	1.050	0.885	0.058	0.030	0.16006
43478.26	0.2300	0.965	0.807	0.054	0.032	0.14694
45454.55	0.2200	0.903	0.721	0.050	0.032	0.13007
47619.05	0.2100	0.861	0.636	0.046	0.031	0.11169

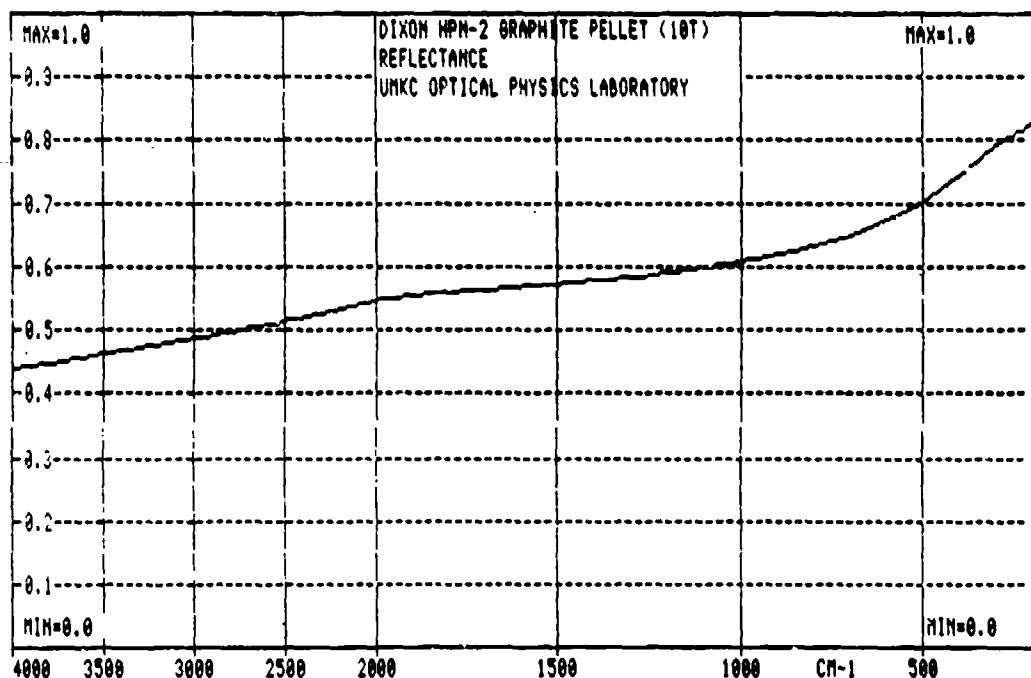


Figure 74. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of the Dixon HPN-2 graphite pellet.

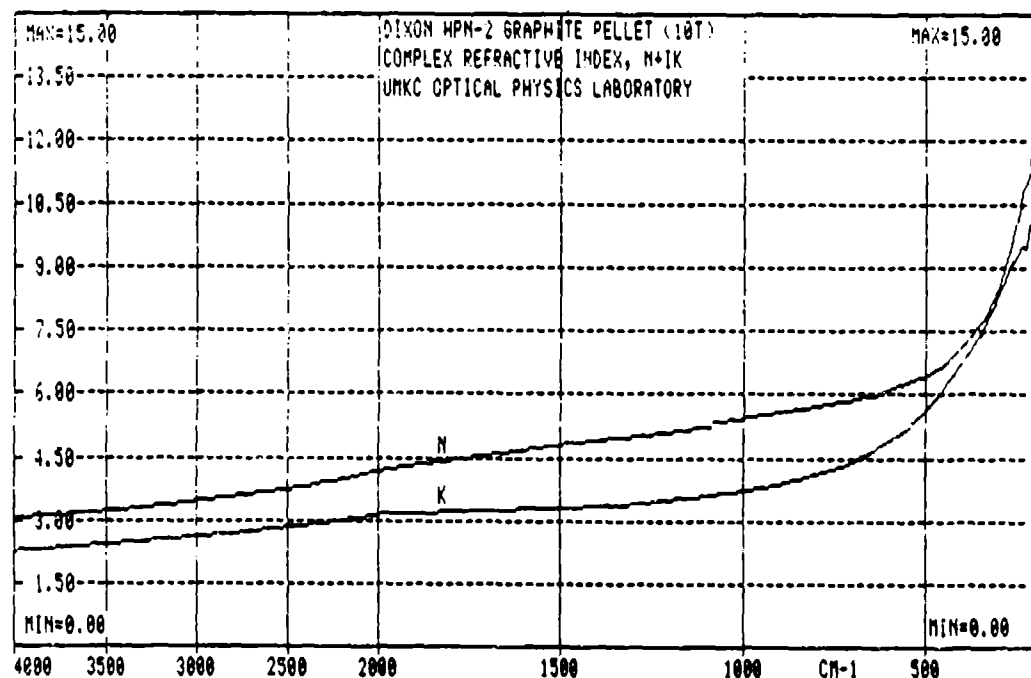


Figure 75. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for the Dixon HPN-2 graphite pellet.

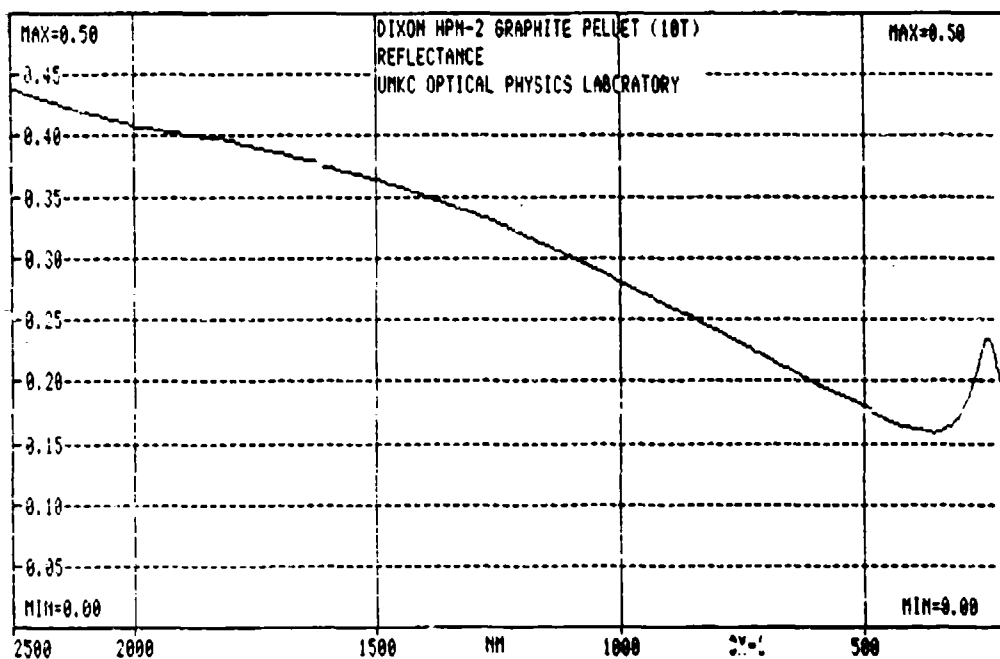


Figure 76. The uv-vis-nir (2,500-200 nm) reflectance spectrum of the Dixon HPN-2 graphite pellet.

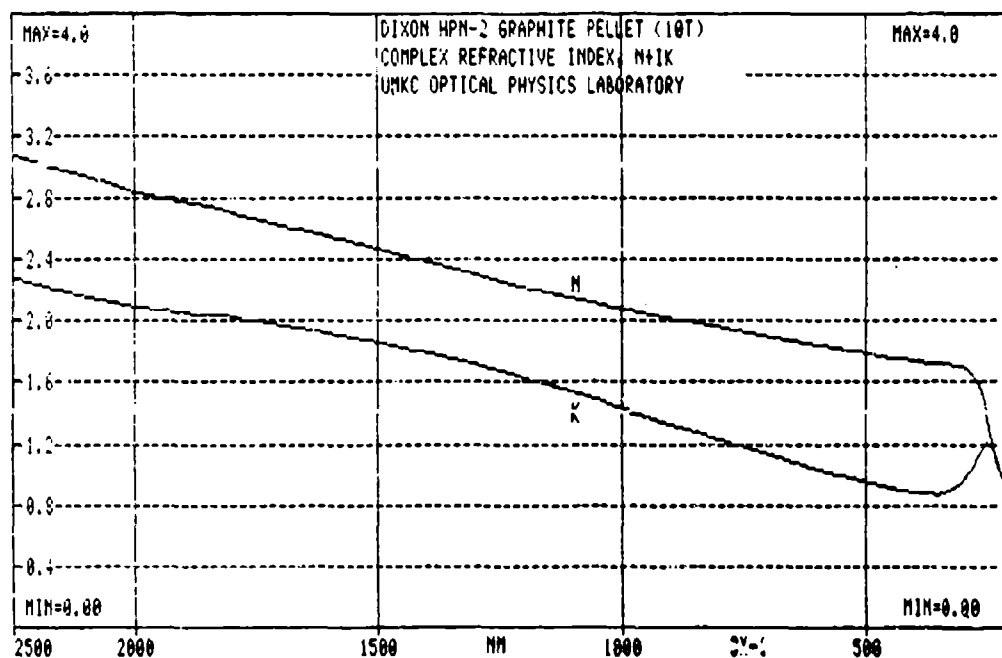


Figure 77. The uv-vis-nir (2,500-210 nm) complex refractive indices  $n$  and  $k$  for the Dixon HPN-2 graphite pellet.

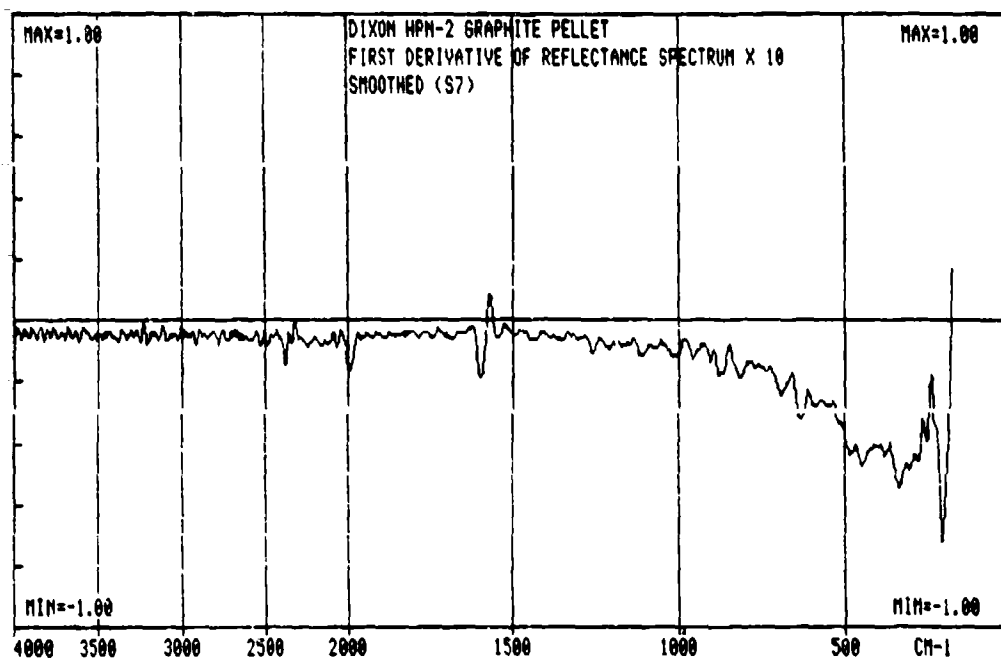


Figure 78. The first derivative of the infrared reflectance spectrum of the Dixon HPN-2 graphite pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	14.474	10.332	1.025	1.680	0.83375
190.00	52.6316	13.618	10.803	0.904	1.628	0.83609
200.00	50.0000	12.390	10.524	0.765	1.418	0.83013
210.00	47.6190	11.898	10.130	0.725	1.312	0.82409
220.00	45.4545	11.266	9.974	0.661	1.208	0.82074
230.00	43.4783	10.952	9.451	0.648	1.126	0.81241
240.00	41.6667	10.813	9.559	0.629	1.114	0.81378
250.00	40.0000	10.214	9.368	0.575	1.016	0.80976
260.00	38.4615	9.984	9.171	0.560	0.972	0.80609
270.00	37.0370	9.586	9.100	0.524	0.912	0.80437
280.00	35.7143	9.225	8.868	0.499	0.850	0.79972
290.00	34.4828	8.969	8.664	0.483	0.805	0.79553
300.00	33.3333	8.682	8.482	0.463	0.758	0.79160
310.00	32.2581	8.425	8.269	0.448	0.715	0.78686
320.00	31.2500	8.224	8.052	0.437	0.681	0.78183
330.00	30.3030	8.035	7.891	0.426	0.651	0.77792
340.00	29.4118	7.830	7.675	0.415	0.617	0.77247
350.00	28.5714	7.709	7.462	0.411	0.596	0.76688
360.00	27.7778	7.602	7.307	0.406	0.578	0.76264
370.00	27.0270	7.469	7.165	0.399	0.558	0.75858
380.00	26.3158	7.363	7.023	0.393	0.541	0.75442
390.00	25.6410	7.247	6.890	0.387	0.524	0.75040
400.00	25.0000	7.154	6.755	0.382	0.510	0.74619
410.00	24.3902	7.053	6.645	0.377	0.495	0.74263
420.00	23.8095	6.950	6.519	0.371	0.480	0.73844
430.00	23.2558	6.867	6.393	0.367	0.468	0.73417
440.00	22.7273	6.777	6.281	0.362	0.455	0.73021
450.00	22.2222	6.686	6.149	0.357	0.443	0.72547
460.00	21.7391	6.629	6.020	0.354	0.434	0.72077
470.00	21.2766	6.582	5.922	0.351	0.427	0.71708
480.00	20.8333	6.511	5.823	0.347	0.417	0.71321
490.00	20.4082	6.460	5.702	0.344	0.409	0.70848
500.00	20.0000	6.438	5.606	0.342	0.405	0.70476
510.00	19.6078	6.398	5.524	0.340	0.399	0.70141
520.00	19.2308	6.367	5.434	0.337	0.394	0.69771
530.00	18.8679	6.340	5.365	0.336	0.390	0.69483
540.00	18.5185	6.307	5.303	0.333	0.385	0.69214
550.00	18.1818	6.271	5.239	0.331	0.381	0.68933
560.00	17.8571	6.238	5.173	0.328	0.376	0.68644
570.00	17.5439	6.202	5.115	0.326	0.371	0.68374
580.00	17.2414	6.167	5.055	0.323	0.367	0.68101
590.00	16.9492	6.129	5.001	0.321	0.362	0.67841
600.00	16.6667	6.101	4.938	0.318	0.358	0.67551
610.00	16.3934	6.071	4.885	0.316	0.354	0.67295
620.00	16.1290	6.042	4.833	0.314	0.350	0.67043
630.00	15.8730	5.996	4.784	0.311	0.345	0.66783
640.00	15.6250	5.972	4.705	0.308	0.341	0.66411
650.00	15.3846	5.971	4.657	0.308	0.340	0.66194
660.00	15.1515	5.952	4.613	0.306	0.337	0.65975
670.00	14.9254	5.935	4.574	0.304	0.335	0.65780

WN	WL	N	K	DN	DK	R
680.00	14.7059	5.904	4.541	0.302	0.331	0.65597
690.00	14.4928	5.877	4.493	0.300	0.328	0.65343
700.00	14.2857	5.863	4.445	0.299	0.326	0.65106
710.00	14.0845	5.850	4.404	0.297	0.323	0.64895
720.00	13.8889	5.839	4.368	0.296	0.322	0.64715
730.00	13.6986	5.825	4.336	0.295	0.320	0.64547
740.00	13.5135	5.808	4.308	0.293	0.318	0.64393
750.00	13.3333	5.791	4.277	0.292	0.315	0.64222
760.00	13.1579	5.777	4.250	0.290	0.314	0.64071
770.00	12.9870	5.761	4.225	0.289	0.312	0.63932
780.00	12.8205	5.738	4.198	0.287	0.309	0.63769
790.00	12.6582	5.726	4.168	0.286	0.308	0.63606
800.00	12.5000	5.706	4.153	0.285	0.306	0.63504
810.00	12.3457	5.677	4.124	0.283	0.303	0.63315
820.00	12.1951	5.661	4.088	0.281	0.300	0.63115
830.00	12.0482	5.652	4.062	0.280	0.299	0.62971
840.00	11.9048	5.638	4.037	0.279	0.297	0.62828
850.00	11.7647	5.627	4.015	0.278	0.296	0.62698
860.00	11.6279	5.616	4.009	0.277	0.295	0.62651
870.00	11.4943	5.571	3.979	0.274	0.291	0.62428
880.00	11.3636	5.572	3.934	0.273	0.290	0.62202
890.00	11.2360	5.561	3.927	0.273	0.289	0.62144
900.00	11.1111	5.549	3.903	0.271	0.287	0.62003
910.00	10.9890	5.540	3.882	0.270	0.286	0.61883
920.00	10.8696	5.532	3.865	0.270	0.285	0.61778
930.00	10.7527	5.523	3.855	0.269	0.284	0.61711
940.00	10.6383	5.506	3.842	0.268	0.282	0.61616
950.00	10.5263	5.489	3.825	0.267	0.281	0.61497
960.00	10.4167	5.474	3.809	0.266	0.279	0.61387
970.00	10.3093	5.458	3.790	0.264	0.277	0.61257
980.00	10.2041	5.458	3.776	0.264	0.277	0.61183
990.00	10.1010	5.440	3.774	0.263	0.276	0.61140
1000.00	10.0000	5.420	3.759	0.262	0.274	0.61026
1010.00	9.9010	5.401	3.744	0.261	0.272	0.60912
1020.00	9.8039	5.388	3.727	0.259	0.271	0.60794
1030.00	9.7087	5.374	3.712	0.258	0.269	0.60684
1040.00	9.6154	5.364	3.694	0.258	0.268	0.60572
1050.00	9.5238	5.353	3.686	0.257	0.267	0.60509
1060.00	9.4340	5.340	3.675	0.256	0.266	0.60422
1070.00	9.3458	5.325	3.665	0.255	0.265	0.60339
1080.00	9.2593	5.309	3.653	0.254	0.263	0.60241
1090.00	9.1743	5.296	3.641	0.253	0.262	0.60149
1100.00	9.0909	5.283	3.635	0.252	0.261	0.60093
1110.00	9.0090	5.260	3.620	0.251	0.259	0.59963
1120.00	8.9286	5.252	3.598	0.250	0.258	0.59824
1130.00	8.8496	5.246	3.590	0.249	0.257	0.59769
1140.00	8.7719	5.231	3.580	0.249	0.256	0.59683
1150.00	8.6957	5.222	3.571	0.248	0.255	0.59612
1160.00	8.6207	5.207	3.565	0.247	0.254	0.59547
1170.00	8.5470	5.194	3.552	0.246	0.253	0.59446



WN	WL	N	K	DN	DK	R
1180.00	8.4746	5.181	3.542	0.245	0.251	0.59364
1190.00	8.4034	5.170	3.536	0.245	0.251	0.59309
1200.00	8.3333	5.155	3.525	0.244	0.249	0.59216
1210.00	8.2643	5.144	3.515	0.243	0.248	0.59132
1220.00	8.1967	5.127	3.504	0.242	0.247	0.59037
1230.00	8.1301	5.120	3.489	0.241	0.246	0.58937
1240.00	8.0645	5.113	3.486	0.241	0.245	0.58901
1250.00	8.0000	5.094	3.479	0.240	0.244	0.58823
1260.00	7.9365	5.080	3.464	0.239	0.243	0.58702
1270.00	7.8740	5.073	3.453	0.238	0.242	0.58623
1280.00	7.8125	5.068	3.442	0.238	0.241	0.58550
1290.00	7.7519	5.058	3.440	0.237	0.241	0.58519
1300.00	7.6923	5.047	3.431	0.237	0.240	0.58441
1310.00	7.6336	5.039	3.425	0.236	0.239	0.58384
1320.00	7.5758	5.030	3.419	0.236	0.238	0.58331
1330.00	7.5188	5.020	3.414	0.235	0.237	0.58278
1340.00	7.4627	5.011	3.409	0.234	0.237	0.58231
1350.00	7.4074	4.998	3.407	0.234	0.236	0.58190
1360.00	7.3529	4.983	3.396	0.233	0.234	0.58091
1370.00	7.2993	4.978	3.392	0.233	0.234	0.58055
1380.00	7.2464	4.964	3.389	0.232	0.233	0.58005
1390.00	7.1942	4.955	3.380	0.231	0.232	0.57934
1400.00	7.1429	4.948	3.375	0.231	0.232	0.57888
1410.00	7.0922	4.934	3.376	0.230	0.231	0.57860
1420.00	7.0423	4.922	3.369	0.230	0.230	0.57793
1430.00	6.9930	4.911	3.365	0.229	0.229	0.57747
1440.00	6.9444	4.899	3.357	0.229	0.228	0.57664
1450.00	6.8966	4.889	3.351	0.228	0.228	0.57611
1460.00	6.8493	4.882	3.345	0.228	0.228	0.57557
1470.00	6.8027	4.873	3.345	0.227	0.226	0.57533
1480.00	6.7568	4.863	3.341	0.227	0.225	0.57492
1490.00	6.7114	4.850	3.339	0.226	0.224	0.57447
1500.00	6.6667	4.838	3.333	0.225	0.223	0.57382
1510.00	6.6225	4.831	3.330	0.225	0.223	0.57348
1520.00	6.5789	4.822	3.330	0.225	0.222	0.57331
1530.00	6.5359	4.812	3.327	0.224	0.221	0.57291
1540.00	6.4935	4.797	3.329	0.224	0.220	0.57269
1550.00	6.4516	4.780	3.322	0.223	0.219	0.57190
1560.00	6.4103	4.780	3.316	0.223	0.219	0.57152
1570.00	6.3694	4.777	3.323	0.223	0.219	0.57188
1580.00	6.3291	4.764	3.343	0.223	0.218	0.57290
1590.00	6.2893	4.713	3.347	0.221	0.215	0.57205
1600.00	6.2500	4.693	3.312	0.220	0.213	0.56933
1610.00	6.2112	4.691	3.301	0.219	0.213	0.56855
1620.00	6.1728	4.688	3.294	0.219	0.212	0.56806
1630.00	6.1350	4.679	3.293	0.218	0.212	0.56781
1640.00	6.0976	4.669	3.291	0.218	0.211	0.56745
1650.00	6.0606	4.657	3.288	0.217	0.210	0.56698
1660.00	6.0241	4.646	3.287	0.217	0.209	0.56666
1670.00	5.9880	4.634	3.284	0.217	0.208	0.56621

WN	WL	N	K	DN	DK	R
1680.00	5.9524	4.620	3.280	0.216	0.207	0.56565
1690.00	5.9172	4.608	3.275	0.215	0.206	0.56506
1700.00	5.8824	4.597	3.271	0.215	0.206	0.56458
1710.00	5.8480	4.585	3.268	0.214	0.205	0.56409
1720.00	5.8140	4.575	3.265	0.214	0.204	0.56367
1730.00	5.7803	4.565	3.266	0.214	0.203	0.56352
1740.00	5.7471	4.549	3.265	0.213	0.202	0.56311
1750.00	5.7143	4.536	3.254	0.212	0.201	0.56211
1760.00	5.6818	4.529	3.256	0.212	0.201	0.56210
1770.00	5.6497	4.512	3.255	0.211	0.199	0.56163
1780.00	5.6180	4.501	3.248	0.211	0.199	0.56094
1790.00	5.5866	4.490	3.244	0.210	0.198	0.56046
1800.00	5.5556	4.478	3.242	0.210	0.197	0.56001
1810.00	5.5249	4.465	3.239	0.209	0.196	0.55959
1820.00	5.4945	4.452	3.236	0.209	0.195	0.55906
1830.00	5.4645	4.441	3.234	0.208	0.194	0.55868
1840.00	5.4348	4.428	3.230	0.208	0.193	0.55818
1850.00	5.4054	4.414	3.228	0.207	0.192	0.55770
1860.00	5.3763	4.403	3.223	0.207	0.191	0.55717
1870.00	5.3476	4.389	3.220	0.206	0.190	0.55665
1880.00	5.3191	4.378	3.218	0.206	0.190	0.55626
1890.00	5.2910	4.362	3.214	0.205	0.188	0.55569
1900.00	5.2632	4.351	3.208	0.204	0.188	0.55504
1910.00	5.2356	4.340	3.208	0.204	0.187	0.55478
1920.00	5.2083	4.323	3.204	0.203	0.186	0.55418
1930.00	5.1813	4.311	3.200	0.203	0.185	0.55359
1940.00	5.1546	4.297	3.197	0.202	0.184	0.55312
1950.00	5.1282	4.284	3.194	0.202	0.183	0.55260
1960.00	5.1020	4.268	3.191	0.201	0.182	0.55210
1970.00	5.0761	4.252	3.186	0.200	0.180	0.55137
1980.00	5.0505	4.237	3.182	0.200	0.179	0.55081
1990.00	5.0251	4.211	3.179	0.199	0.177	0.55006
2000.00	5.0000	4.192	3.154	0.198	0.176	0.54778
2010.00	4.9751	4.192	3.142	0.197	0.176	0.54686
2020.00	4.9505	4.183	3.134	0.197	0.175	0.54609
2030.00	4.9261	4.177	3.125	0.196	0.175	0.54522
2040.00	4.9020	4.173	3.122	0.196	0.174	0.54493
2050.00	4.8780	4.158	3.124	0.195	0.173	0.54481
2060.00	4.8544	4.141	3.113	0.195	0.172	0.54357
2070.00	4.8309	4.137	3.103	0.194	0.172	0.54274
2080.00	4.8077	4.127	3.101	0.194	0.171	0.54236
2090.00	4.7847	4.118	3.095	0.193	0.170	0.54171
2100.00	4.7619	4.107	3.092	0.193	0.169	0.54126
2110.00	4.7393	4.092	3.083	0.192	0.168	0.54023
2120.00	4.7170	4.084	3.075	0.192	0.168	0.53945
2130.00	4.6948	4.075	3.072	0.191	0.167	0.53899
2140.00	4.6729	4.062	3.064	0.191	0.166	0.53812
2150.00	4.6512	4.053	3.056	0.190	0.165	0.53729
2160.00	4.6296	4.043	3.048	0.189	0.165	0.53646
2170.00	4.6083	4.034	3.041	0.189	0.164	0.53569

WN	WL	N	K	DN	DK	R
2180.00	4.5872	4.027	3.035	0.188	0.163	0.53507
2190.00	4.5662	4.018	3.030	0.188	0.163	0.53446
2200.00	4.5455	4.010	3.025	0.188	0.162	0.53389
2210.00	4.5249	3.999	3.020	0.187	0.161	0.53321
2220.00	4.5045	3.989	3.012	0.187	0.161	0.53237
2230.00	4.4843	3.981	3.006	0.186	0.160	0.53167
2240.00	4.4643	3.971	2.997	0.186	0.159	0.53076
2250.00	4.4444	3.965	2.989	0.185	0.159	0.52994
2260.00	4.4248	3.959	2.984	0.185	0.158	0.52938
2270.00	4.4053	3.951	2.978	0.184	0.158	0.52877
2280.00	4.3860	3.945	2.971	0.184	0.157	0.52802
2290.00	4.3668	3.940	2.969	0.184	0.157	0.52776
2300.00	4.3478	3.931	2.962	0.183	0.156	0.52695
2310.00	4.3290	3.931	2.957	0.183	0.156	0.52658
2320.00	4.3103	3.923	2.962	0.183	0.156	0.52681
2330.00	4.2918	3.906	2.962	0.182	0.155	0.52651
2340.00	4.2735	3.894	2.953	0.182	0.154	0.52546
2350.00	4.2553	3.889	2.948	0.181	0.153	0.52493
2360.00	4.2373	3.876	2.948	0.181	0.152	0.52462
2370.00	4.2194	3.858	2.940	0.180	0.151	0.52362
2380.00	4.2017	3.844	2.927	0.179	0.150	0.52217
2390.00	4.1841	3.842	2.910	0.179	0.150	0.52065
2400.00	4.1667	3.842	2.906	0.179	0.150	0.52032
2410.00	4.1494	3.832	2.900	0.178	0.149	0.51959
2420.00	4.1322	3.830	2.891	0.178	0.149	0.51875
2430.00	4.1152	3.826	2.891	0.178	0.149	0.51862
2440.00	4.0984	3.818	2.889	0.177	0.148	0.51831
2450.00	4.0816	3.810	2.881	0.177	0.148	0.51742
2460.00	4.0650	3.804	2.877	0.177	0.147	0.51698
2470.00	4.0486	3.794	2.873	0.176	0.146	0.51641
2480.00	4.0323	3.788	2.869	0.176	0.146	0.51588
2490.00	4.0161	3.778	2.862	0.175	0.145	0.51507
2500.00	4.0000	3.773	2.854	0.175	0.145	0.51424
2510.00	3.9841	3.769	2.850	0.175	0.145	0.51379
2520.00	3.9683	3.757	2.849	0.174	0.144	0.51349
2530.00	3.9526	3.747	2.838	0.174	0.143	0.51229
2540.00	3.9370	3.748	2.831	0.173	0.143	0.51163
2550.00	3.9216	3.743	2.829	0.173	0.143	0.51131
2560.00	3.9063	3.736	2.825	0.173	0.142	0.51080
2570.00	3.8911	3.729	2.820	0.173	0.142	0.51022
2580.00	3.8760	3.720	2.817	0.172	0.141	0.50971
2590.00	3.8610	3.714	2.810	0.172	0.141	0.50897
2600.00	3.8462	3.708	2.805	0.171	0.140	0.50842
2610.00	3.8314	3.702	2.799	0.171	0.140	0.50774
2620.00	3.8168	3.697	2.794	0.171	0.140	0.50716
2630.00	3.8023	3.689	2.791	0.170	0.139	0.50673
2640.00	3.7879	3.684	2.785	0.170	0.139	0.50598
2650.00	3.7736	3.678	2.782	0.170	0.138	0.50559
2660.00	3.7594	3.673	2.773	0.169	0.138	0.50462
2670.00	3.7453	3.670	2.774	0.169	0.138	0.50468

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.661	2.768	0.169	0.137	0.50395
2690.00	3.7175	3.656	2.766	0.169	0.137	0.50368
2700.00	3.7037	3.647	2.760	0.168	0.136	0.50292
2710.00	3.6900	3.642	2.757	0.168	0.136	0.50248
2720.00	3.6765	3.633	2.752	0.168	0.135	0.50181
2730.00	3.6630	3.629	2.743	0.167	0.135	0.50089
2740.00	3.6496	3.627	2.740	0.167	0.135	0.50058
2750.00	3.6364	3.620	2.739	0.167	0.134	0.50033
2760.00	3.6232	3.611	2.735	0.166	0.134	0.49968
2770.00	3.6101	3.605	2.730	0.166	0.133	0.49911
2780.00	3.5971	3.598	2.724	0.166	0.133	0.49834
2790.00	3.5842	3.595	2.717	0.165	0.133	0.49767
2800.00	3.5714	3.590	2.716	0.165	0.132	0.49739
2810.00	3.5587	3.584	2.711	0.165	0.132	0.49686
2820.00	3.5461	3.581	2.709	0.165	0.132	0.49649
2830.00	3.5336	3.573	2.704	0.164	0.131	0.49590
2840.00	3.5211	3.567	2.699	0.164	0.131	0.49527
2850.00	3.5088	3.562	2.695	0.164	0.130	0.49473
2860.00	3.4965	3.557	2.690	0.163	0.130	0.49418
2870.00	3.4843	3.552	2.687	0.163	0.130	0.49378
2880.00	3.4722	3.545	2.683	0.163	0.129	0.49326
2890.00	3.4602	3.542	2.678	0.163	0.129	0.49269
2900.00	3.4483	3.536	2.678	0.162	0.129	0.49252
2910.00	3.4364	3.527	2.676	0.162	0.128	0.49209
2920.00	3.4247	3.521	2.667	0.162	0.128	0.49111
2930.00	3.4130	3.519	2.662	0.161	0.127	0.49052
2940.00	3.4014	3.515	2.658	0.161	0.127	0.49007
2950.00	3.3898	3.508	2.658	0.161	0.127	0.48989
2960.00	3.3784	3.501	2.650	0.160	0.126	0.48897
2970.00	3.3670	3.500	2.648	0.160	0.126	0.48878
2980.00	3.3557	3.491	2.646	0.160	0.126	0.48832
2990.00	3.3445	3.487	2.640	0.160	0.125	0.48766
3000.00	3.3333	3.483	2.636	0.159	0.125	0.48713
3010.00	3.3223	3.481	2.638	0.160	0.125	0.48731
3020.00	3.3113	3.468	2.635	0.159	0.124	0.48677
3030.00	3.3003	3.464	2.627	0.159	0.124	0.48586
3040.00	3.2895	3.460	2.624	0.158	0.123	0.48546
3050.00	3.2787	3.453	2.622	0.158	0.123	0.48504
3060.00	3.2680	3.448	2.615	0.158	0.123	0.48419
3070.00	3.2573	3.443	2.613	0.158	0.122	0.48396
3080.00	3.2468	3.437	2.610	0.157	0.122	0.48342
3090.00	3.2362	3.430	2.604	0.157	0.122	0.48269
3100.00	3.2258	3.427	2.598	0.157	0.121	0.48199
3110.00	3.2154	3.424	2.594	0.156	0.121	0.48157
3120.00	3.2051	3.421	2.594	0.156	0.121	0.48144
3130.00	3.1949	3.412	2.592	0.156	0.120	0.48102
3140.00	3.1847	3.405	2.583	0.156	0.120	0.48000
3150.00	3.1746	3.404	2.581	0.156	0.120	0.47979
3160.00	3.1646	3.397	2.578	0.155	0.119	0.47932
3170.00	3.1546	3.393	2.573	0.155	0.119	0.47869

WN	WL	N	K	DN	DK	R
3180.00	3.1447	3.389	2.571	0.155	0.119	0.47838
3190.00	3.1348	3.382	2.571	0.155	0.118	0.47817
3200.00	3.1250	3.373	2.563	0.154	0.118	0.47722
3210.00	3.1153	3.370	2.556	0.154	0.118	0.47638
3220.00	3.1056	3.369	2.553	0.154	0.118	0.47604
3230.00	3.0960	3.366	2.553	0.154	0.117	0.47597
3240.00	3.0864	3.357	2.553	0.153	0.117	0.47570
3250.00	3.0769	3.350	2.543	0.153	0.116	0.47451
3260.00	3.0675	3.350	2.538	0.153	0.116	0.47406
3270.00	3.0581	3.344	2.539	0.153	0.116	0.47399
3280.00	3.0488	3.338	2.533	0.152	0.115	0.47319
3290.00	3.0395	3.335	2.531	0.152	0.115	0.47287
3300.00	3.0303	3.329	2.526	0.152	0.115	0.47222
3310.00	3.0211	3.326	2.524	0.152	0.115	0.47197
3320.00	3.0120	3.318	2.522	0.151	0.114	0.47154
3330.00	3.0030	3.313	2.514	0.151	0.114	0.47062
3340.00	2.9940	3.311	2.510	0.151	0.114	0.47011
3350.00	2.9851	3.306	2.509	0.150	0.113	0.46982
3360.00	2.9762	3.300	2.506	0.150	0.113	0.46939
3370.00	2.9674	3.294	2.503	0.150	0.113	0.46893
3380.00	2.9586	3.288	2.497	0.150	0.112	0.46818
3390.00	2.9499	3.285	2.491	0.149	0.112	0.46744
3400.00	2.9412	3.282	2.489	0.149	0.112	0.46709
3410.00	2.9326	3.276	2.484	0.149	0.112	0.46649
3420.00	2.9240	3.273	2.479	0.149	0.111	0.46583
3430.00	2.9155	3.270	2.476	0.148	0.111	0.46547
3440.00	2.9070	3.264	2.474	0.148	0.111	0.46514
3450.00	2.8986	3.261	2.469	0.148	0.111	0.46449
3460.00	2.8902	3.256	2.468	0.148	0.110	0.46423
3470.00	2.8818	3.252	2.462	0.147	0.110	0.46345
3480.00	2.8736	3.246	2.459	0.147	0.110	0.46303
3490.00	2.8653	3.243	2.453	0.147	0.109	0.46231
3500.00	2.8571	3.240	2.453	0.147	0.109	0.46215
3510.00	2.8490	3.235	2.447	0.146	0.109	0.46138
3520.00	2.8409	3.230	2.444	0.146	0.109	0.46094
3530.00	2.8329	3.225	2.438	0.146	0.108	0.46020
3540.00	2.8249	3.223	2.436	0.146	0.108	0.45988
3550.00	2.8169	3.216	2.430	0.145	0.108	0.45912
3560.00	2.8090	3.215	2.424	0.145	0.108	0.45837
3570.00	2.8011	3.213	2.424	0.145	0.108	0.45834
3580.00	2.7933	3.209	2.420	0.145	0.107	0.45775
3590.00	2.7855	3.208	2.415	0.145	0.107	0.45722
3600.00	2.7778	3.204	2.416	0.145	0.107	0.45723
3610.00	2.7701	3.196	2.414	0.144	0.106	0.45673
3620.00	2.7624	3.192	2.408	0.144	0.106	0.45601
3630.00	2.7548	3.188	2.403	0.144	0.106	0.45534
3640.00	2.7473	3.183	2.399	0.143	0.106	0.45480
3650.00	2.7397	3.182	2.393	0.143	0.106	0.45410
3660.00	2.7322	3.179	2.395	0.143	0.105	0.45418
3670.00	2.7248	3.173	2.386	0.143	0.105	0.45310

WN	WL	N	K	DN	DK	R
3680.00	2.7174	3.173	2.381	0.143	0.105	0.45254
3690.00	2.7100	3.171	2.381	0.143	0.105	0.45247
3700.00	2.7027	3.165	2.380	0.142	0.105	0.45214
3710.00	2.6954	3.161	2.374	0.142	0.104	0.45140
3720.00	2.6882	3.159	2.370	0.142	0.104	0.45087
3730.00	2.6810	3.154	2.368	0.142	0.104	0.45057
3740.00	2.6738	3.150	2.363	0.141	0.104	0.44983
3750.00	2.6667	3.149	2.359	0.141	0.104	0.44938
3760.00	2.6596	3.145	2.356	0.141	0.103	0.44888
3770.00	2.6525	3.144	2.351	0.141	0.103	0.44832
3780.00	2.6455	3.143	2.352	0.141	0.103	0.44846
3790.00	2.6385	3.136	2.349	0.140	0.103	0.44788
3800.00	2.6316	3.134	2.341	0.140	0.103	0.44694
3810.00	2.6247	3.133	2.342	0.140	0.103	0.44707
3820.00	2.6178	3.124	2.341	0.140	0.102	0.44669
3830.00	2.6110	3.122	2.333	0.140	0.102	0.44568
3840.00	2.6042	3.122	2.331	0.139	0.102	0.44541
3850.00	2.5974	3.119	2.331	0.139	0.102	0.44534
3860.00	2.5907	3.113	2.326	0.139	0.102	0.44462
3870.00	2.5840	3.112	2.322	0.139	0.101	0.44419
3880.00	2.5773	3.106	2.318	0.139	0.101	0.44354
3890.00	2.5707	3.106	2.314	0.138	0.101	0.44309
3900.00	2.5641	3.104	2.312	0.138	0.101	0.44281
3910.00	2.5575	3.100	2.311	0.138	0.101	0.44249
3920.00	2.5510	3.095	2.306	0.138	0.100	0.44187
3930.00	2.5445	3.095	2.302	0.138	0.100	0.44138
3940.00	2.5381	3.092	2.302	0.138	0.100	0.44125
3950.00	2.5316	3.088	2.297	0.137	0.100	0.44061
3960.00	2.5253	3.082	2.294	0.137	0.100	0.44008
3970.00	2.5189	3.083	2.288	0.137	0.100	0.43942
3980.00	2.5126	3.081	2.289	0.137	0.100	0.43948
3990.00	2.5063	3.077	2.285	0.137	0.099	0.43884
4000.00	2.5000	3.075	2.281	0.136	0.099	0.43837
4016.06	2.4900	3.072	2.277	0.136	0.099	0.43782
4032.26	2.4800	3.068	2.273	0.136	0.099	0.43721
4048.58	2.4700	3.063	2.269	0.136	0.099	0.43662
4065.04	2.4600	3.059	2.264	0.135	0.098	0.43593
4081.63	2.4500	3.055	2.260	0.135	0.098	0.43529
4098.36	2.4400	3.050	2.255	0.135	0.098	0.43464
4115.23	2.4300	3.046	2.251	0.135	0.098	0.43399
4132.23	2.4200	3.042	2.246	0.134	0.097	0.43334
4149.38	2.4100	3.038	2.242	0.134	0.097	0.43276
4166.67	2.4000	3.034	2.238	0.134	0.097	0.43215
4184.10	2.3900	3.030	2.235	0.134	0.097	0.43159
4201.68	2.3800	3.025	2.231	0.133	0.096	0.43102
4219.41	2.3700	3.020	2.226	0.133	0.096	0.43026
4237.29	2.3600	3.016	2.222	0.133	0.096	0.42963
4255.32	2.3500	3.011	2.217	0.133	0.096	0.42898
4273.50	2.3400	3.007	2.213	0.132	0.095	0.42834
4291.85	2.3300	3.003	2.209	0.132	0.095	0.42775

WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.998	2.205	0.132	0.095	0.42711
4329.00	2.3100	2.994	2.200	0.132	0.095	0.42642
4347.83	2.3000	2.989	2.196	0.131	0.094	0.42577
4366.81	2.2900	2.985	2.192	0.131	0.094	0.42512
4385.96	2.2800	2.981	2.187	0.131	0.094	0.42447
4405.29	2.2700	2.977	2.184	0.131	0.094	0.42386
4424.78	2.2600	2.973	2.179	0.130	0.093	0.42314
4444.44	2.2500	2.970	2.175	0.130	0.093	0.42265
4464.29	2.2400	2.965	2.172	0.130	0.093	0.42215
4484.30	2.2300	2.960	2.169	0.130	0.093	0.42154
4504.50	2.2200	2.955	2.164	0.129	0.092	0.42089
4524.89	2.2100	2.951	2.161	0.129	0.092	0.42030
4545.45	2.2000	2.946	2.157	0.129	0.092	0.41967
4566.21	2.1900	2.942	2.152	0.129	0.092	0.41902
4587.16	2.1800	2.939	2.149	0.128	0.091	0.41850
4608.29	2.1700	2.934	2.146	0.128	0.091	0.41803
4629.63	2.1600	2.929	2.143	0.128	0.091	0.41743
4651.16	2.1500	2.925	2.139	0.128	0.091	0.41681
4672.90	2.1400	2.921	2.136	0.127	0.090	0.41628
4694.84	2.1300	2.916	2.133	0.127	0.090	0.41584
4716.98	2.1200	2.911	2.130	0.127	0.090	0.41529
4739.34	2.1100	2.906	2.127	0.127	0.089	0.41470
4761.90	2.1000	2.902	2.125	0.127	0.089	0.41432
4784.69	2.0900	2.896	2.123	0.126	0.089	0.41389
4807.69	2.0800	2.890	2.120	0.126	0.088	0.41332
4830.92	2.0700	2.884	2.116	0.126	0.088	0.41265
4854.37	2.0600	2.878	2.112	0.126	0.088	0.41206
4878.05	2.0500	2.873	2.110	0.126	0.087	0.41155
4901.96	2.0400	2.866	2.106	0.125	0.087	0.41092
4926.11	2.0300	2.860	2.102	0.125	0.087	0.41018
4950.50	2.0200	2.855	2.099	0.125	0.086	0.40965
4975.12	2.0100	2.847	2.096	0.124	0.086	0.40911
5000.00	2.0000	2.842	2.090	0.124	0.086	0.40806
5025.13	1.9900	2.839	2.088	0.124	0.085	0.40772
5050.51	1.9800	2.831	2.085	0.124	0.085	0.40716
5076.14	1.9700	2.825	2.081	0.123	0.085	0.40646
5102.04	1.9600	2.819	2.078	0.123	0.084	0.40562
5128.21	1.9500	2.812	2.074	0.123	0.084	0.40518
5154.64	1.9400	2.806	2.070	0.123	0.084	0.40444
5181.35	1.9300	2.800	2.066	0.122	0.083	0.40374
5208.33	1.9200	2.793	2.062	0.122	0.083	0.40306
5235.60	1.9100	2.788	2.058	0.122	0.082	0.40231
5263.16	1.9000	2.782	2.055	0.122	0.082	0.40168
5291.01	1.8900	2.776	2.051	0.121	0.082	0.40100
5319.15	1.8800	2.770	2.047	0.121	0.081	0.40033
5347.59	1.8700	2.765	2.043	0.121	0.081	0.39965
5376.34	1.8600	2.760	2.041	0.121	0.081	0.39922
5405.41	1.8500	2.753	2.040	0.120	0.081	0.39885
5434.78	1.8400	2.747	2.038	0.120	0.080	0.39840
5464.48	1.8300	2.740	2.036	0.120	0.080	0.39794

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.732	2.037	0.120	0.079	0.39787
5524.86	1.8100	2.719	2.036	0.120	0.078	0.39733
5555.56	1.8000	2.708	2.030	0.119	0.078	0.39629
5586.59	1.7900	2.697	2.025	0.119	0.077	0.39529
5617.98	1.7800	2.688	2.017	0.118	0.077	0.39385
5649.72	1.7700	2.681	2.010	0.118	0.076	0.39276
5681.82	1.7600	2.675	2.005	0.118	0.076	0.39193
5714.29	1.7500	2.666	2.001	0.117	0.075	0.39100
5747.13	1.7400	2.658	1.995	0.117	0.075	0.39005
5780.35	1.7300	2.650	1.990	0.117	0.074	0.38901
5813.95	1.7200	2.642	1.984	0.116	0.074	0.38800
5847.95	1.7100	2.635	1.978	0.116	0.074	0.38700
5882.35	1.7000	2.627	1.972	0.116	0.073	0.38595
5917.16	1.6900	2.620	1.967	0.115	0.073	0.38503
5952.38	1.6800	2.612	1.961	0.115	0.072	0.38396
5988.02	1.6700	2.605	1.956	0.114	0.072	0.38299
6024.10	1.6600	2.597	1.950	0.114	0.072	0.38196
6060.61	1.6500	2.590	1.945	0.114	0.071	0.38095
6097.56	1.6400	2.582	1.939	0.113	0.071	0.37995
6134.97	1.6300	2.575	1.934	0.113	0.070	0.37895
6172.84	1.6200	2.567	1.929	0.113	0.070	0.37795
6211.18	1.6100	2.559	1.923	0.112	0.069	0.37686
6250.00	1.6000	2.551	1.917	0.112	0.069	0.37581
6289.31	1.5900	2.543	1.911	0.112	0.069	0.37467
6329.11	1.5800	2.536	1.904	0.111	0.068	0.37343
6369.43	1.5700	2.530	1.899	0.111	0.068	0.37255
6410.26	1.5600	2.522	1.894	0.110	0.067	0.37160
6451.61	1.5500	2.513	1.889	0.110	0.067	0.37059
6493.51	1.5400	2.505	1.882	0.110	0.067	0.36933
6535.95	1.5300	2.498	1.876	0.109	0.066	0.36826
6578.95	1.5200	2.490	1.872	0.109	0.066	0.36740
6622.52	1.5100	2.481	1.866	0.109	0.065	0.36626
6666.67	1.5000	2.472	1.860	0.108	0.065	0.36511
6711.41	1.4900	2.463	1.854	0.108	0.064	0.36387
6756.76	1.4800	2.455	1.848	0.107	0.064	0.36270
6802.72	1.4700	2.445	1.841	0.107	0.063	0.36146
6849.32	1.4600	2.436	1.834	0.107	0.063	0.36007
6896.55	1.4500	2.428	1.827	0.106	0.062	0.35872
6944.44	1.4400	2.420	1.820	0.106	0.062	0.35738
6993.01	1.4300	2.411	1.812	0.105	0.062	0.35594
7042.25	1.4200	2.403	1.805	0.105	0.061	0.35463
7092.20	1.4100	2.395	1.797	0.104	0.061	0.35322
7142.86	1.4000	2.387	1.790	0.104	0.060	0.35180
7194.24	1.3900	2.379	1.783	0.104	0.060	0.35042
7246.38	1.3800	2.371	1.776	0.103	0.060	0.34909
7299.27	1.3700	2.363	1.768	0.103	0.059	0.34760
7352.94	1.3600	2.355	1.761	0.102	0.059	0.34632
7407.41	1.3500	2.347	1.754	0.102	0.058	0.34497
7462.69	1.3400	2.338	1.747	0.101	0.058	0.34351
7518.80	1.3300	2.329	1.739	0.101	0.057	0.34206



WN	WL	N	K	DN	DK	R
7575.76	1.3200	2.320	1.732	0.101	0.057	0.34054
7633.59	1.3100	2.312	1.724	0.100	0.057	0.33900
7692.31	1.3000	2.303	1.716	0.100	0.056	0.33750
7751.94	1.2900	2.294	1.707	0.099	0.056	0.33579
7812.50	1.2800	2.286	1.698	0.099	0.055	0.33411
7874.02	1.2700	2.277	1.690	0.098	0.055	0.33249
7936.51	1.2600	2.269	1.682	0.098	0.055	0.33083
8000.00	1.2500	2.260	1.673	0.097	0.054	0.32919
8064.52	1.2400	2.252	1.665	0.097	0.054	0.32751
8130.08	1.2300	2.242	1.656	0.096	0.053	0.32565
8196.72	1.2200	2.234	1.646	0.096	0.053	0.32374
8264.46	1.2100	2.225	1.637	0.095	0.053	0.32193
8333.33	1.2000	2.218	1.624	0.094	0.052	0.31950
8403.36	1.1900	2.214	1.616	0.094	0.052	0.31800
8474.58	1.1800	2.205	1.607	0.093	0.052	0.31632
8547.01	1.1700	2.197	1.598	0.093	0.051	0.31452
8620.69	1.1600	2.189	1.589	0.092	0.051	0.31272
8695.65	1.1500	2.182	1.580	0.092	0.051	0.31087
8771.93	1.1400	2.174	1.570	0.091	0.050	0.30894
8849.56	1.1300	2.166	1.560	0.091	0.050	0.30696
8928.57	1.1200	2.158	1.550	0.090	0.050	0.30492
9009.01	1.1100	2.152	1.540	0.090	0.050	0.30288
9090.91	1.1000	2.145	1.530	0.089	0.049	0.30098
9174.31	1.0900	2.138	1.520	0.089	0.049	0.29901
9259.26	1.0800	2.132	1.511	0.088	0.049	0.29714
9345.79	1.0700	2.124	1.502	0.088	0.048	0.29525
9433.96	1.0600	2.116	1.491	0.087	0.048	0.29312
9523.81	1.0500	2.110	1.481	0.087	0.048	0.29111
9615.38	1.0400	2.103	1.472	0.086	0.048	0.28913
9708.74	1.0300	2.096	1.461	0.085	0.047	0.28696
9803.92	1.0200	2.090	1.450	0.085	0.047	0.28480
9900.99	1.0100	2.084	1.440	0.084	0.047	0.28272
10000.00	1.0000	2.078	1.430	0.084	0.047	0.28074
10101.01	0.9900	2.073	1.420	0.083	0.047	0.27869
10204.08	0.9800	2.067	1.411	0.083	0.046	0.27684
10309.28	0.9700	2.061	1.401	0.082	0.046	0.27487
10416.67	0.9600	2.055	1.392	0.082	0.046	0.27301
10526.32	0.9500	2.048	1.383	0.081	0.046	0.27105
10638.30	0.9400	2.042	1.373	0.081	0.045	0.26904
10752.69	0.9300	2.035	1.363	0.080	0.045	0.26702
10869.57	0.9200	2.029	1.353	0.079	0.045	0.26495
10989.01	0.9100	2.023	1.344	0.079	0.045	0.26295
11111.11	0.9000	2.017	1.333	0.078	0.045	0.26070
11235.96	0.8900	2.012	1.324	0.078	0.044	0.25879
11363.64	0.8800	2.006	1.314	0.077	0.044	0.25682
11494.25	0.8700	2.001	1.305	0.077	0.044	0.25479
11627.91	0.8600	1.995	1.297	0.076	0.044	0.25306
11764.71	0.8500	1.987	1.287	0.076	0.043	0.25099
11904.76	0.8400	1.980	1.276	0.075	0.043	0.24871
12048.19	0.8300	1.974	1.266	0.075	0.043	0.24657

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.969	1.256	0.074	0.043	0.24430
12345.68	0.8100	1.964	1.246	0.073	0.043	0.24226
12500.00	0.8000	1.960	1.239	0.073	0.043	0.24077
12658.23	0.7900	1.952	1.230	0.073	0.042	0.23884
12820.51	0.7800	1.945	1.219	0.072	0.042	0.23650
12987.01	0.7700	1.939	1.210	0.071	0.042	0.23445
13157.89	0.7600	1.932	1.201	0.071	0.041	0.23238
13333.33	0.7500	1.926	1.190	0.070	0.041	0.23010
13513.51	0.7400	1.921	1.180	0.070	0.041	0.22806
13698.63	0.7300	1.915	1.171	0.069	0.041	0.22595
13888.89	0.7200	1.909	1.161	0.069	0.041	0.22387
14084.51	0.7100	1.902	1.152	0.068	0.040	0.22176
14285.71	0.7000	1.895	1.142	0.067	0.040	0.21948
14492.75	0.6900	1.889	1.131	0.067	0.040	0.21719
14705.88	0.6800	1.884	1.120	0.066	0.040	0.21490
14925.37	0.6700	1.878	1.110	0.066	0.040	0.21259
15151.52	0.6600	1.874	1.099	0.065	0.039	0.21044
15384.62	0.6500	1.870	1.091	0.064	0.039	0.20867
15625.00	0.6400	1.864	1.083	0.064	0.039	0.20686
15873.02	0.6300	1.857	1.072	0.063	0.039	0.20447
16129.03	0.6200	1.852	1.062	0.063	0.039	0.20228
16393.44	0.6100	1.847	1.052	0.062	0.038	0.20017
16666.67	0.6000	1.842	1.043	0.062	0.038	0.19815
16949.15	0.5900	1.838	1.034	0.061	0.038	0.19622
17241.38	0.5800	1.833	1.025	0.061	0.038	0.19430
17543.86	0.5700	1.827	1.018	0.060	0.038	0.19255
17857.14	0.5600	1.821	1.008	0.060	0.037	0.19047
18181.82	0.5500	1.817	1.000	0.059	0.037	0.18863
18518.52	0.5400	1.812	0.992	0.059	0.037	0.18692
18867.92	0.5300	1.807	0.985	0.058	0.037	0.18519
19230.77	0.5200	1.801	0.977	0.058	0.037	0.18339
19607.84	0.5100	1.794	0.970	0.057	0.036	0.18158
20000.00	0.5000	1.788	0.962	0.057	0.036	0.17979
20408.16	0.4900	1.782	0.955	0.056	0.036	0.17806
20833.33	0.4800	1.775	0.947	0.056	0.036	0.17620
21276.60	0.4700	1.767	0.939	0.055	0.035	0.17409
21739.13	0.4600	1.761	0.929	0.055	0.035	0.17185
22222.22	0.4500	1.756	0.920	0.054	0.035	0.16988
22727.27	0.4400	1.752	0.912	0.054	0.035	0.16809
23255.81	0.4300	1.749	0.904	0.053	0.035	0.16652
23809.52	0.4200	1.746	0.898	0.053	0.034	0.16519
24390.24	0.4100	1.743	0.894	0.053	0.034	0.16424
25000.00	0.4000	1.739	0.892	0.053	0.034	0.16356
25641.03	0.3900	1.733	0.889	0.053	0.034	0.16270
26315.79	0.3800	1.727	0.886	0.052	0.034	0.16170
27027.03	0.3700	1.722	0.883	0.052	0.033	0.16070
27777.78	0.3600	1.720	0.880	0.052	0.033	0.16002
28571.43	0.3500	1.721	0.880	0.052	0.033	0.16022
29411.76	0.3400	1.724	0.890	0.053	0.033	0.16213
30303.03	0.3300	1.718	0.905	0.054	0.033	0.16458

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.710	0.917	0.054	0.033	0.16636
32258.06	0.3100	1.706	0.937	0.055	0.032	0.16976
33333.33	0.3000	1.697	0.968	0.057	0.032	0.17531
34482.76	0.2900	1.679	1.009	0.060	0.030	0.18251
35714.29	0.2800	1.646	1.061	0.062	0.028	0.19196
37037.04	0.2700	1.591	1.125	0.066	0.023	0.20449
38461.54	0.2600	1.490	1.195	0.070	0.022	0.22103
40000.00	0.2500	1.326	1.221	0.075	0.033	0.23388
41666.67	0.2400	1.162	1.162	0.072	0.039	0.23092
43478.26	0.2300	1.045	1.060	0.067	0.040	0.21486
45454.55	0.2200	0.962	0.952	0.061	0.040	0.19365
47619.05	0.2100	0.900	0.837	0.055	0.038	0.16726
50000.00	0.2000	0.840	0.723	0.050	0.037	0.14280

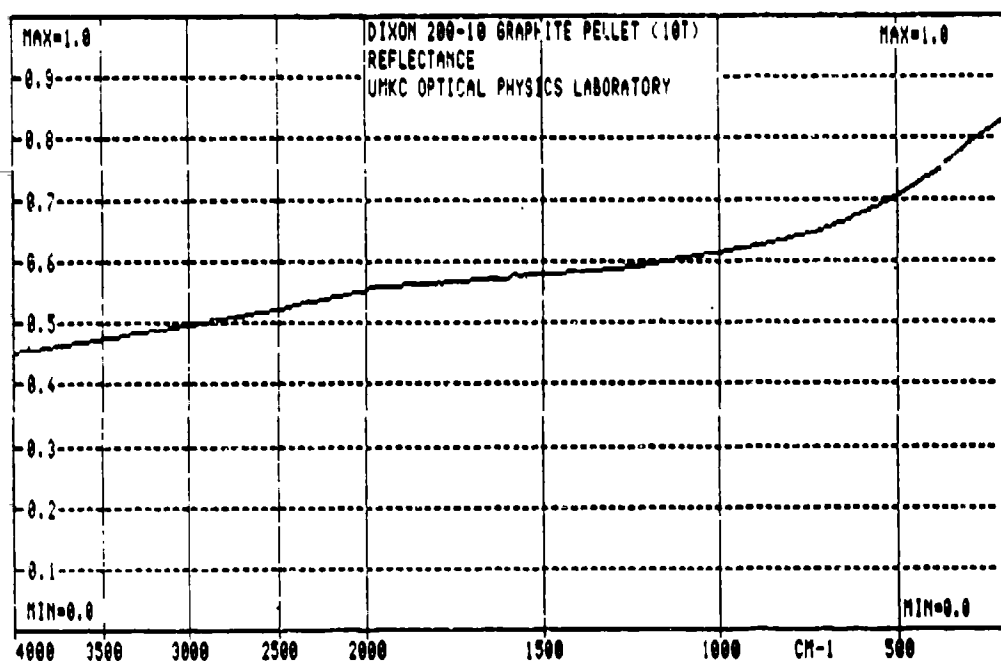


Figure 79. The infrared (4,000-180  $\text{cm}^{-1}$ ) reflectance spectrum of the Dixon 200-10 graphite pellet.

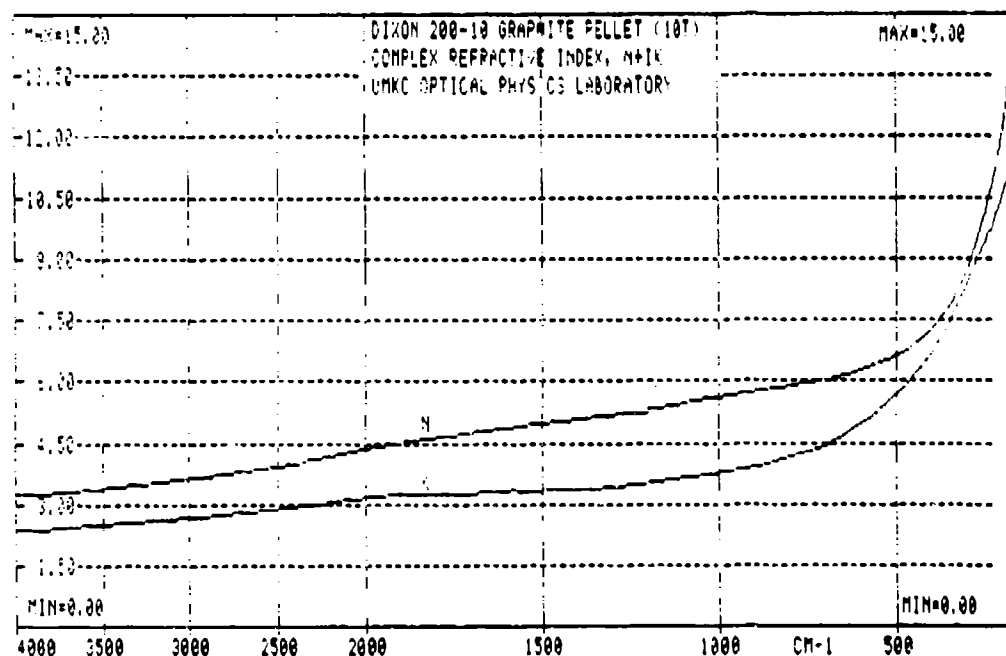


Figure 80. The infrared (4,000-180  $\text{cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for the Dixon 200-10 graphite pellet.

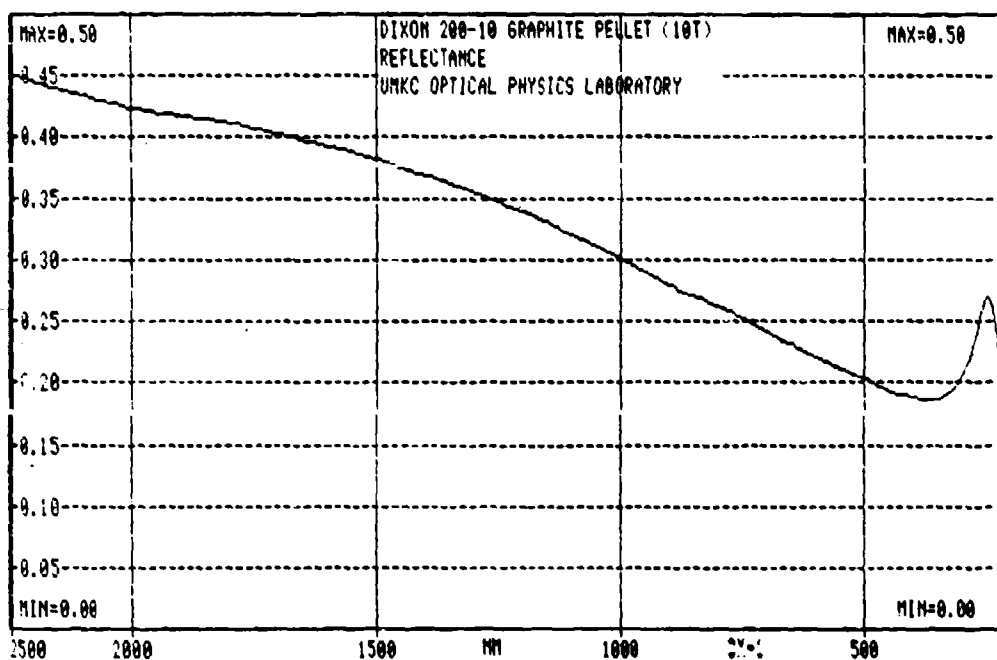


Figure 81. The uv-vis-nir (2,500-200 nm) reflectance spectrum of the Dixon 200-10 graphite pellet.

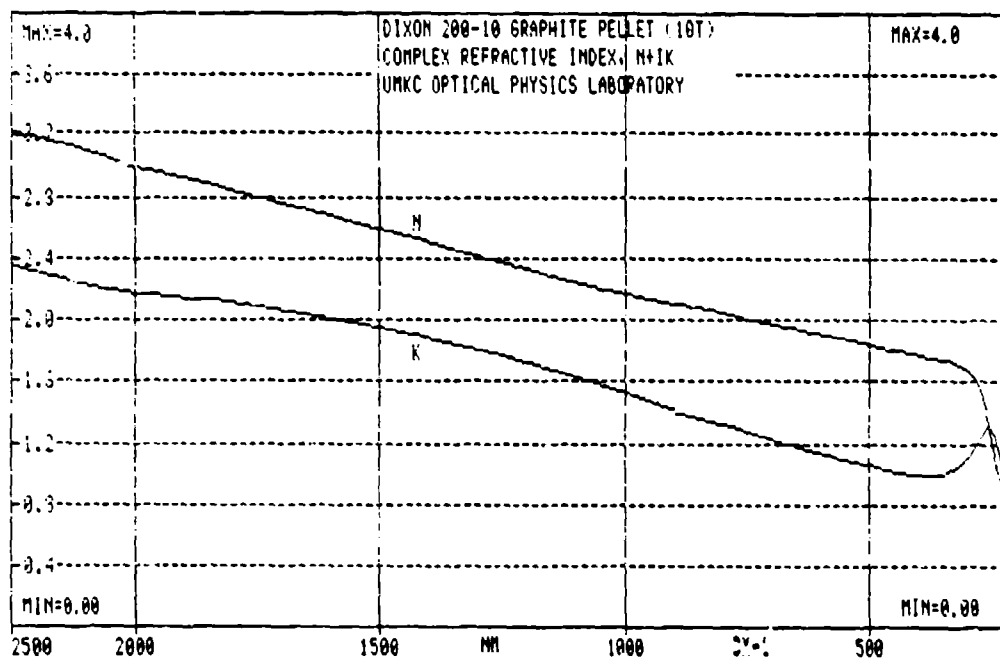


Figure 82. The uv-vis-nir (2,500-210 nm) complex refractive indices  $n$  and  $k$  for the Dixon 200-10 graphite pellet.

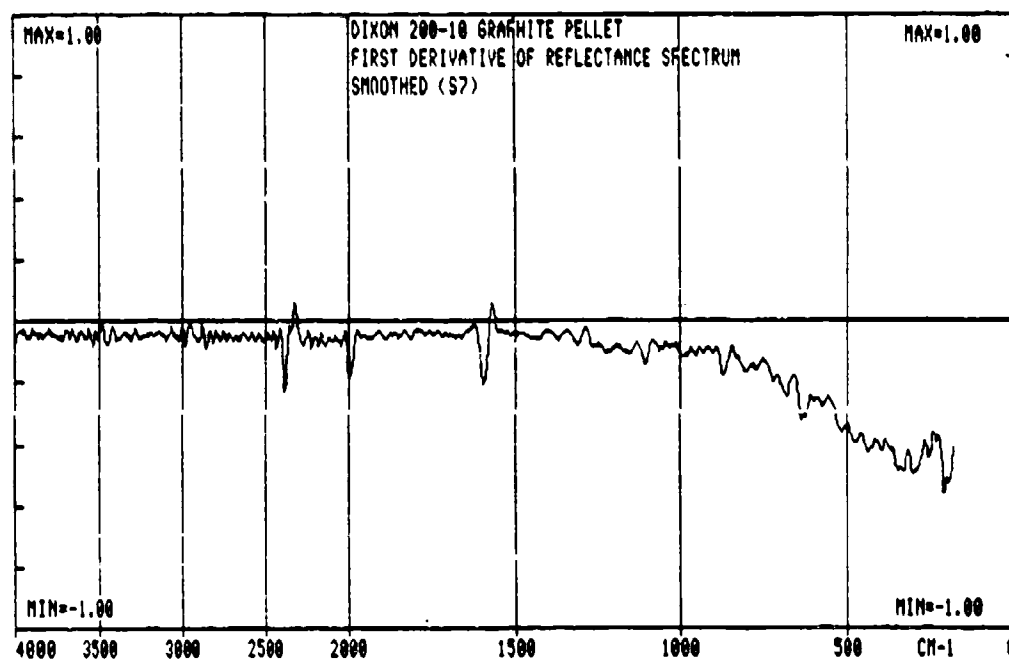


Figure 83. The first derivative of the infrared reflectance spectrum of the Dixon 200-10 graphite pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	14.081	11.173	0.936	1.715	0.84105
190.00	52.6316	13.059	10.974	0.825	1.559	0.83674
200.00	50.0000	12.265	10.704	0.741	1.413	0.83213
210.00	47.6190	11.724	10.336	0.696	1.302	0.82652
220.00	45.7143	11.242	10.099	0.653	1.213	0.82250
230.00	43.8383	10.869	9.764	0.627	1.135	0.81702
240.00	41.6667	10.572	9.684	0.599	1.086	0.81535
250.00	40.0000	10.114	9.434	0.563	1.005	0.81073
260.00	38.4615	9.838	9.199	0.545	0.953	0.80639
270.00	37.0370	9.528	9.036	0.521	0.900	0.80314
280.00	35.7143	9.235	8.818	0.501	0.849	0.79876
290.00	34.4828	8.986	8.630	0.495	0.806	0.79483
300.00	33.3333	8.716	8.412	0.468	0.760	0.79011
310.00	32.2581	8.529	8.184	0.459	0.726	0.78500
320.00	31.2500	8.348	8.009	0.449	0.696	0.78089
330.00	30.3030	8.180	7.844	0.439	0.668	0.77687
340.00	29.4118	7.994	7.665	0.429	0.639	0.77231
350.00	28.5714	7.873	7.463	0.423	0.617	0.76704
360.00	27.7778	7.750	7.316	0.417	0.597	0.76304
370.00	27.0270	7.630	7.150	0.411	0.577	0.75838
380.00	26.3158	7.545	7.019	0.407	0.563	0.75458
390.00	25.6410	7.429	6.898	0.400	0.546	0.75091
400.00	25.0000	7.329	6.767	0.394	0.531	0.74686
410.00	24.3902	7.239	6.638	0.390	0.517	0.74276
420.00	23.8095	7.159	6.526	0.385	0.505	0.73912
430.00	23.2558	7.060	6.412	0.379	0.491	0.73523
440.00	22.7273	6.981	6.284	0.375	0.478	0.73087
450.00	22.2222	6.922	6.178	0.372	0.469	0.72717
460.00	21.7391	6.859	6.076	0.368	0.460	0.7231
470.00	21.2766	6.794	5.977	0.364	0.451	0.7198
480.00	20.8333	6.732	5.872	0.360	0.442	0.71590
490.00	20.4082	6.683	5.775	0.357	0.434	0.71220
500.00	20.0000	6.643	5.690	0.355	0.428	0.70892
510.00	19.6078	6.589	5.609	0.351	0.421	0.70564
520.00	19.2308	6.539	5.520	0.348	0.413	0.70202
530.00	18.8679	6.505	5.435	0.346	0.408	0.69861
540.00	18.5185	6.478	5.365	0.343	0.404	0.69573
550.00	18.1818	6.445	5.295	0.341	0.399	0.69277
560.00	17.8571	6.414	5.238	0.339	0.394	0.69029
570.00	17.5439	6.374	5.180	0.336	0.389	0.68771
580.00	17.2414	6.333	5.118	0.333	0.384	0.68489
590.00	16.9492	6.305	5.053	0.331	0.379	0.68204
600.00	16.6667	6.274	5.006	0.329	0.375	0.67984
610.00	16.3934	6.226	4.949	0.325	0.370	0.67699
620.00	16.1290	6.203	4.886	0.323	0.366	0.67418
630.00	15.8730	6.158	4.842	0.320	0.361	0.67191
640.00	15.6250	6.130	4.754	0.317	0.356	0.66788
650.00	15.3846	6.128	4.706	0.317	0.355	0.66574
660.00	15.1515	6.116	4.658	0.315	0.352	0.66355
670.00	14.9254	6.095	4.623	0.314	0.350	0.66180

WN	WL	N	K	DN	DK	R
680.00	14.7059	6.066	4.579	0.311	0.346	0.65951
690.00	14.4928	6.037	4.531	0.309	0.342	0.65706
700.00	14.2857	6.030	4.479	0.308	0.340	0.65467
710.00	14.0845	6.014	4.446	0.306	0.338	0.65299
720.00	13.8889	5.998	4.405	0.304	0.336	0.65094
730.00	13.6986	5.984	4.370	0.303	0.334	0.64913
740.00	13.5135	5.975	4.332	0.302	0.332	0.64733
750.00	13.3333	5.968	4.307	0.301	0.330	0.64607
760.00	13.1579	5.949	4.283	0.299	0.328	0.64469
770.00	12.9870	5.933	4.256	0.298	0.326	0.64324
780.00	12.8205	5.910	4.231	0.296	0.324	0.64175
790.00	12.6582	5.895	4.199	0.295	0.322	0.64003
800.00	12.5000	5.880	4.178	0.294	0.320	0.63885
810.00	12.3457	5.856	4.148	0.292	0.317	0.63708
820.00	12.1951	5.845	4.110	0.290	0.315	0.63511
830.00	12.0482	5.839	4.094	0.290	0.314	0.63423
840.00	11.9048	5.819	4.075	0.288	0.312	0.63324
850.00	11.7647	5.811	4.050	0.287	0.311	0.63160
860.00	11.6279	5.803	4.046	0.287	0.310	0.63139
870.00	11.4943	5.756	4.020	0.284	0.306	0.62934
880.00	11.3636	5.755	3.976	0.283	0.304	0.62722
890.00	11.2360	5.744	3.965	0.282	0.303	0.62650
900.00	11.1111	5.734	3.943	0.281	0.302	0.62525
910.00	10.9890	5.724	3.927	0.280	0.301	0.62432
920.00	10.8696	5.712	3.915	0.279	0.299	0.62350
930.00	10.7527	5.696	3.897	0.278	0.298	0.62232
940.00	10.6383	5.681	3.886	0.277	0.296	0.62150
950.00	10.5263	5.665	3.869	0.276	0.295	0.62037
960.00	10.4167	5.652	3.857	0.275	0.293	0.61956
970.00	10.3093	5.634	3.837	0.273	0.291	0.61821
980.00	10.2041	5.623	3.827	0.271	0.290	0.61752
990.00	10.1010	5.599	3.811	0.271	0.288	0.61629
1000.00	10.0000	5.589	3.790	0.270	0.287	0.61497
1010.00	9.9010	5.577	3.775	0.269	0.286	0.61406
1020.00	9.8039	5.565	3.764	0.268	0.285	0.61331
1030.00	9.7087	5.554	3.752	0.267	0.283	0.61244
1040.00	9.6154	5.541	3.741	0.266	0.282	0.61158
1050.00	9.5238	5.527	3.729	0.266	0.281	0.61069
1060.00	9.4340	5.510	3.722	0.265	0.279	0.61002
1070.00	9.3458	5.493	3.707	0.263	0.278	0.60888
1080.00	9.2593	5.486	3.696	0.263	0.277	0.60820
1090.00	9.1743	5.468	3.694	0.262	0.275	0.60773
1100.00	9.0909	5.444	3.679	0.260	0.273	0.60647
1110.00	9.0090	5.426	3.664	0.259	0.272	0.60532
1120.00	8.9286	5.410	3.645	0.258	0.270	0.60398
1130.00	8.8496	5.408	3.632	0.258	0.270	0.60326
1140.00	8.7714	5.392	3.627	0.257	0.268	0.60266
1150.00	8.6957	5.372	3.611	0.255	0.266	0.60140
1160.00	8.6217	5.359	3.598	0.254	0.265	0.60041
1170.00	8.5490	5.347	3.588	0.254	0.264	0.59962



WN	WL	N	K	DN	DK	R
1180.00	8.4746	5.332	3.572	0.252	0.263	0.59843
1190.00	8.4034	5.327	3.557	0.252	0.262	0.59754
1200.00	8.3333	5.310	3.553	0.251	0.261	0.59694
1210.00	8.2645	5.295	3.536	0.250	0.259	0.59572
1220.00	8.1967	5.288	3.524	0.249	0.258	0.59488
1230.00	8.1301	5.274	3.514	0.248	0.257	0.59404
1240.00	8.0645	5.263	3.495	0.247	0.256	0.59276
1250.00	8.0000	5.262	3.486	0.247	0.255	0.59224
1260.00	7.9365	5.248	3.477	0.246	0.254	0.59144
1270.00	7.8740	5.240	3.461	0.245	0.253	0.59035
1280.00	7.8125	5.240	3.454	0.245	0.253	0.58997
1290.00	7.7519	5.235	3.452	0.245	0.253	0.58974
1300.00	7.6923	5.224	3.449	0.244	0.252	0.58935
1310.00	7.6336	5.211	3.442	0.243	0.251	0.58863
1320.00	7.5758	5.202	3.432	0.243	0.250	0.58786
1330.00	7.5188	5.198	3.425	0.242	0.250	0.58741
1340.00	7.4627	5.189	3.421	0.242	0.249	0.58695
1350.00	7.4074	5.181	3.418	0.241	0.248	0.58662
1360.00	7.3529	5.170	3.417	0.241	0.247	0.58631
1370.00	7.2993	5.157	3.412	0.240	0.246	0.58572
1380.00	7.2464	5.149	3.401	0.240	0.246	0.58493
1390.00	7.1942	5.142	3.401	0.239	0.245	0.58476
1400.00	7.1429	5.130	3.398	0.239	0.244	0.58431
1410.00	7.0922	5.121	3.396	0.238	0.244	0.58398
1420.00	7.0423	5.109	3.395	0.238	0.243	0.58366
1430.00	6.9930	5.093	3.391	0.237	0.242	0.58305
1440.00	6.9444	5.084	3.383	0.236	0.241	0.58239
1450.00	6.8966	5.072	3.381	0.236	0.240	0.58202
1460.00	6.8493	5.059	3.374	0.235	0.239	0.58128
1470.00	6.8027	5.054	3.369	0.235	0.238	0.58090
1480.00	6.7568	5.041	3.369	0.234	0.238	0.58058
1490.00	6.7114	5.031	3.361	0.234	0.237	0.57988
1500.00	6.6667	5.022	3.361	0.233	0.236	0.57970
1510.00	6.6225	5.008	3.358	0.233	0.235	0.57916
1520.00	6.5789	4.998	3.352	0.232	0.234	0.57861
1530.00	6.5359	4.992	3.351	0.232	0.234	0.57841
1540.00	6.4935	4.978	3.350	0.231	0.233	0.57801
1550.00	6.4516	4.973	3.345	0.231	0.233	0.57759
1560.00	6.4103	4.961	3.349	0.231	0.232	0.57757
1570.00	6.3694	4.954	3.350	0.230	0.231	0.57749
1580.00	6.3291	4.940	3.372	0.231	0.231	0.57851
1590.00	6.2893	4.890	3.371	0.229	0.228	0.57735
1600.00	6.2500	4.867	3.332	0.227	0.225	0.57445
1610.00	6.2112	4.872	3.317	0.226	0.225	0.57361
1620.00	6.1728	4.870	3.317	0.226	0.225	0.57352
1630.00	6.1350	4.861	3.311	0.226	0.224	0.57300
1640.00	6.0976	4.855	3.313	0.225	0.224	0.57297
1650.00	6.0606	4.838	3.312	0.225	0.223	0.57253
1660.00	6.0241	4.828	3.306	0.224	0.222	0.57192
1670.00	5.9880	4.817	3.305	0.224	0.221	0.57158

WN	WL	N	K	DN	DK	R
1680.00	5.9524	4.805	3.301	0.223	0.220	0.57108
1690.00	5.9172	4.794	3.296	0.223	0.219	0.57048
1700.00	5.8824	4.785	3.294	0.222	0.219	0.57018
1710.00	5.8480	4.770	3.289	0.222	0.218	0.56952
1720.00	5.8140	4.762	3.285	0.221	0.217	0.56911
1730.00	5.7803	4.751	3.284	0.221	0.216	0.56878
1740.00	5.7471	4.741	3.281	0.220	0.216	0.56839
1750.00	5.7143	4.729	3.277	0.220	0.215	0.56787
1760.00	5.6818	4.720	3.275	0.219	0.214	0.56753
1770.00	5.6497	4.707	3.276	0.219	0.213	0.56729
1780.00	5.6180	4.694	3.270	0.218	0.212	0.56658
1790.00	5.5866	4.689	3.269	0.218	0.212	0.56644
1800.00	5.5556	4.673	3.273	0.218	0.211	0.56631
1810.00	5.5249	4.657	3.266	0.217	0.210	0.56553
1820.00	5.4945	4.648	3.263	0.216	0.209	0.56512
1830.00	5.4645	4.635	3.263	0.216	0.208	0.56482
1840.00	5.4348	4.623	3.260	0.215	0.207	0.56436
1850.00	5.4054	4.609	3.258	0.215	0.206	0.56393
1860.00	5.3763	4.597	3.253	0.214	0.205	0.56335
1870.00	5.3476	4.586	3.254	0.214	0.205	0.56313
1880.00	5.3191	4.570	3.250	0.213	0.203	0.56251
1890.00	5.2910	4.558	3.246	0.213	0.202	0.56203
1900.00	5.2632	4.545	3.242	0.212	0.202	0.56149
1910.00	5.2356	4.536	3.241	0.212	0.201	0.56121
1920.00	5.2083	4.519	3.241	0.211	0.200	0.56083
1930.00	5.1813	4.503	3.236	0.210	0.199	0.56017
1940.00	5.1546	4.491	3.233	0.210	0.198	0.55965
1950.00	5.1282	4.476	3.231	0.209	0.197	0.55923
1960.00	5.1020	4.462	3.226	0.209	0.196	0.55859
1970.00	5.0761	4.447	3.225	0.208	0.194	0.55819
1980.00	5.0505	4.430	3.222	0.207	0.193	0.55761
1990.00	5.0251	4.402	3.221	0.207	0.191	0.55698
2000.00	5.0000	4.377	3.194	0.205	0.189	0.55450
2010.00	4.9751	4.379	3.174	0.204	0.189	0.55309
2020.00	4.9505	4.376	3.168	0.204	0.189	0.55258
2030.00	4.9261	4.368	3.166	0.204	0.188	0.55227
2040.00	4.9020	4.356	3.160	0.203	0.187	0.55156
2050.00	4.8780	4.346	3.154	0.202	0.187	0.55091
2060.00	4.8544	4.337	3.144	0.202	0.186	0.55000
2070.00	4.8309	4.330	3.141	0.202	0.185	0.54960
2080.00	4.8077	4.318	3.135	0.201	0.184	0.54894
2090.00	4.7847	4.311	3.130	0.201	0.184	0.54839
2100.00	4.7619	4.297	3.127	0.200	0.183	0.54788
2110.00	4.7393	4.288	3.116	0.199	0.182	0.54688
2120.00	4.7170	4.281	3.114	0.199	0.182	0.54656
2130.00	4.6948	4.268	3.109	0.198	0.181	0.54593
2140.00	4.6729	4.256	3.101	0.198	0.180	0.54501
2150.00	4.6512	4.248	3.093	0.197	0.179	0.54421
2160.00	4.6296	4.241	3.089	0.197	0.179	0.54382
2170.00	4.6083	4.232	3.083	0.196	0.178	0.54312

WN	WL	N	K	DN	DK	R
2180.00	4.5872	4.222	3.079	0.196	0.177	0.54264
2190.00	4.5662	4.211	3.067	0.195	0.176	0.54146
2200.00	4.5455	4.208	3.064	0.195	0.176	0.54114
2210.00	4.5249	4.192	3.061	0.194	0.175	0.54060
2220.00	4.5045	4.184	3.048	0.194	0.174	0.53938
2230.00	4.4843	4.181	3.043	0.193	0.174	0.53893
2240.00	4.4643	4.173	3.038	0.193	0.174	0.53838
2250.00	4.4444	4.166	3.036	0.193	0.173	0.53804
2260.00	4.4248	4.156	3.030	0.192	0.172	0.53731
2270.00	4.4053	4.149	3.021	0.192	0.172	0.53647
2280.00	4.3860	4.144	3.013	0.191	0.171	0.53579
2290.00	4.3668	4.140	3.008	0.191	0.171	0.53527
2300.00	4.3478	4.142	3.003	0.191	0.171	0.53494
2310.00	4.3290	4.140	3.008	0.191	0.171	0.53527
2320.00	4.3103	4.134	3.014	0.191	0.171	0.53559
2330.00	4.2918	4.119	3.024	0.191	0.170	0.53604
2340.00	4.2735	4.096	3.023	0.190	0.168	0.53549
2350.00	4.2553	4.089	3.017	0.190	0.168	0.53484
2360.00	4.2373	4.071	3.029	0.190	0.166	0.53547
2370.00	4.2194	4.035	3.014	0.188	0.164	0.53349
2380.00	4.2017	4.020	2.989	0.187	0.163	0.53108
2390.00	4.1841	4.019	2.968	0.186	0.162	0.52932
2400.00	4.1667	4.023	2.958	0.186	0.163	0.52859
2410.00	4.1494	4.022	2.956	0.186	0.163	0.52843
2420.00	4.1322	4.008	2.953	0.185	0.162	0.52789
2430.00	4.1152	4.004	2.939	0.185	0.161	0.52666
2440.00	4.0984	4.001	2.937	0.184	0.161	0.52635
2450.00	4.0816	3.996	2.931	0.184	0.161	0.52582
2460.00	4.0650	3.986	2.930	0.184	0.160	0.52543
2470.00	4.0486	3.980	2.922	0.183	0.159	0.52468
2480.00	4.0323	3.976	2.920	0.183	0.159	0.52442
2490.00	4.0161	3.967	2.917	0.183	0.159	0.52393
2500.00	4.0000	3.960	2.911	0.182	0.158	0.52328
2510.00	3.9841	3.951	2.906	0.182	0.157	0.52266
2520.00	3.9683	3.945	2.898	0.181	0.157	0.52183
2530.00	3.9526	3.938	2.894	0.181	0.156	0.52137
2540.00	3.9370	3.932	2.890	0.181	0.156	0.52086
2550.00	3.9216	3.925	2.887	0.180	0.156	0.52047
2560.00	3.9063	3.917	2.880	0.180	0.155	0.51973
2570.00	3.8911	3.910	2.874	0.179	0.154	0.51903
2580.00	3.8760	3.906	2.868	0.179	0.154	0.51845
2590.00	3.8610	3.900	2.866	0.179	0.154	0.51811
2600.00	3.8462	3.893	2.862	0.179	0.153	0.51755
2610.00	3.8314	3.884	2.856	0.178	0.153	0.51689
2620.00	3.8168	3.880	2.850	0.178	0.152	0.51624
2630.00	3.8023	3.876	2.847	0.178	0.152	0.51589
2640.00	3.7879	3.868	2.843	0.177	0.151	0.51541
2650.00	3.7736	3.860	2.839	0.177	0.151	0.51482
2660.00	3.7594	3.854	2.835	0.177	0.150	0.51438
2670.00	3.7453	3.846	2.829	0.176	0.150	0.51366

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.842	2.824	0.176	0.150	0.51309
2690.00	3.7175	3.834	2.821	0.175	0.149	0.51269
2700.00	3.7037	3.826	2.814	0.175	0.148	0.51185
2710.00	3.6900	3.826	2.808	0.175	0.148	0.51134
2720.00	3.6765	3.818	2.809	0.175	0.148	0.51123
2730.00	3.6630	3.810	2.800	0.174	0.147	0.51028
2740.00	3.6496	3.808	2.797	0.174	0.147	0.50987
2750.00	3.6364	3.803	2.795	0.174	0.147	0.50960
2760.00	3.6232	3.793	2.793	0.173	0.146	0.50918
2770.00	3.6101	3.786	2.784	0.173	0.146	0.50822
2780.00	3.5971	3.784	2.779	0.173	0.146	0.50779
2790.00	3.5842	3.778	2.780	0.172	0.145	0.50772
2800.00	3.5714	3.768	2.773	0.172	0.144	0.50688
2810.00	3.5587	3.764	2.771	0.172	0.144	0.50657
2820.00	3.5461	3.757	2.764	0.171	0.144	0.50574
2830.00	3.5336	3.755	2.761	0.171	0.143	0.50543
2840.00	3.5211	3.744	2.762	0.171	0.143	0.50529
2850.00	3.5088	3.733	2.751	0.170	0.142	0.50398
2860.00	3.4965	3.736	2.743	0.170	0.142	0.50331
2870.00	3.4843	3.732	2.742	0.170	0.142	0.50317
2880.00	3.4722	3.725	2.739	0.169	0.141	0.50270
2890.00	3.4602	3.717	2.736	0.169	0.141	0.50227
2900.00	3.4483	3.711	2.728	0.169	0.140	0.50134
2910.00	3.4364	3.709	2.723	0.168	0.140	0.50086
2920.00	3.4247	3.704	2.717	0.168	0.140	0.50018
2930.00	3.4130	3.701	2.714	0.168	0.140	0.49980
2940.00	3.4014	3.699	2.711	0.168	0.140	0.49949
2950.00	3.3898	3.695	2.710	0.168	0.139	0.49931
2960.00	3.3784	3.690	2.708	0.167	0.139	0.49897
2970.00	3.3670	3.682	2.707	0.167	0.138	0.49868
2980.00	3.3557	3.677	2.704	0.167	0.138	0.49834
2990.00	3.3445	3.667	2.698	0.166	0.137	0.49752
3000.00	3.3333	3.668	2.692	0.166	0.137	0.49697
3010.00	3.3223	3.663	2.697	0.166	0.137	0.49731
3020.00	3.3113	3.651	2.691	0.166	0.136	0.49651
3030.00	3.3003	3.648	2.685	0.165	0.136	0.49583
3040.00	3.2895	3.644	2.684	0.165	0.136	0.49563
3050.00	3.2787	3.635	2.678	0.165	0.135	0.49483
3060.00	3.2680	3.636	2.674	0.165	0.135	0.49445
3070.00	3.2573	3.629	2.673	0.165	0.135	0.49422
3080.00	3.2468	3.625	2.670	0.164	0.135	0.49388
3090.00	3.2362	3.617	2.670	0.164	0.134	0.49365
3100.00	3.2258	3.609	2.664	0.164	0.134	0.49289
3110.00	3.2154	3.606	2.658	0.163	0.133	0.49226
3120.00	3.2051	3.599	2.656	0.163	0.133	0.49191
3130.00	3.1949	3.597	2.651	0.163	0.133	0.49131
3140.00	3.1847	3.590	2.649	0.163	0.132	0.49097
3150.00	3.1746	3.588	2.645	0.162	0.132	0.49052
3160.00	3.1646	3.582	2.644	0.162	0.132	0.49027
3170.00	3.1546	3.574	2.640	0.162	0.131	0.48977

WN	WL	N	K	DN	DK	R
3180.00	3.1447	3.571	2.636	0.162	0.131	0.48923
3190.00	3.1348	3.564	2.636	0.161	0.130	0.48907
3200.00	3.1250	3.559	2.629	0.161	0.130	0.48823
3210.00	3.1153	3.555	2.626	0.161	0.130	0.48792
3220.00	3.1056	3.549	2.624	0.161	0.129	0.48756
3230.00	3.0960	3.543	2.621	0.160	0.129	0.48710
3240.00	3.0864	3.538	2.618	0.160	0.129	0.48663
3250.00	3.0769	3.533	2.614	0.160	0.128	0.48612
3260.00	3.0675	3.528	2.610	0.160	0.128	0.48567
3270.00	3.0581	3.522	2.605	0.159	0.128	0.48496
3280.00	3.0488	3.519	2.600	0.159	0.127	0.48438
3290.00	3.0395	3.515	2.602	0.159	0.127	0.48455
3300.00	3.0303	3.505	2.598	0.159	0.127	0.48391
3310.00	3.0211	3.501	2.591	0.158	0.126	0.48310
3320.00	3.0120	3.497	2.589	0.158	0.126	0.48277
3330.00	3.0030	3.491	2.584	0.158	0.126	0.48212
3340.00	2.9940	3.488	2.580	0.158	0.125	0.48172
3350.00	2.9851	3.484	2.579	0.157	0.125	0.48150
3360.00	2.9762	3.477	2.577	0.157	0.125	0.48106
3370.00	2.9674	3.472	2.571	0.157	0.124	0.48041
3380.00	2.9586	3.467	2.568	0.157	0.124	0.47989
3390.00	2.9499	3.462	2.563	0.156	0.124	0.47931
3400.00	2.9412	3.457	2.557	0.156	0.123	0.47858
3410.00	2.9326	3.457	2.554	0.156	0.123	0.47824
3420.00	2.9240	3.452	2.555	0.156	0.123	0.47826
3430.00	2.9155	3.443	2.553	0.155	0.122	0.47783
3440.00	2.9070	3.439	2.548	0.155	0.122	0.47716
3450.00	2.8986	3.431	2.543	0.155	0.122	0.47652
3460.00	2.8902	3.428	2.534	0.154	0.121	0.47551
3470.00	2.8818	3.426	2.531	0.154	0.121	0.47516
3480.00	2.8736	3.425	2.526	0.154	0.121	0.47462
3490.00	2.8653	3.423	2.528	0.154	0.121	0.47477
3500.00	2.8571	3.415	2.527	0.154	0.121	0.47448
3510.00	2.8490	3.409	2.521	0.153	0.120	0.47362
3520.00	2.8409	3.406	2.517	0.153	0.120	0.47322
3530.00	2.8329	3.401	2.515	0.153	0.120	0.47287
3540.00	2.8249	3.396	2.513	0.153	0.119	0.47249
3550.00	2.8169	3.387	2.505	0.152	0.119	0.47148
3560.00	2.8090	3.389	2.499	0.152	0.119	0.47087
3570.00	2.8011	3.385	2.500	0.152	0.119	0.47090
3580.00	2.7933	3.380	2.497	0.152	0.118	0.47039
3590.00	2.7855	3.375	2.493	0.151	0.118	0.46993
3600.00	2.7778	3.370	2.488	0.151	0.118	0.46924
3610.00	2.7701	3.368	2.485	0.151	0.118	0.46883
3620.00	2.7624	3.365	2.482	0.151	0.117	0.46849
3630.00	2.7548	3.359	2.480	0.151	0.117	0.46808
3640.00	2.7473	3.354	2.474	0.150	0.117	0.46740
3650.00	2.7397	3.349	2.473	0.150	0.116	0.46717
3660.00	2.7322	3.346	2.464	0.150	0.116	0.46610
3670.00	2.7248	3.346	2.464	0.150	0.116	0.46604

WN	WL	N	K	DN	DK	R
3680.00	2.7174	3.340	2.461	0.149	0.116	0.46564
3690.00	2.7100	3.337	2.457	0.149	0.116	0.46513
3700.00	2.7027	3.333	2.453	0.149	0.115	0.46452
3710.00	2.6954	3.331	2.452	0.149	0.115	0.46442
3720.00	2.6862	3.324	2.450	0.149	0.115	0.46396
3730.00	2.6810	3.321	2.444	0.148	0.115	0.46327
3740.00	2.6738	3.316	2.441	0.148	0.114	0.46286
3750.00	2.6667	3.312	2.437	0.148	0.114	0.46231
3760.00	2.6596	3.309	2.433	0.148	0.114	0.46178
3770.00	2.6525	3.307	2.429	0.147	0.114	0.46132
3780.00	2.6455	3.303	2.426	0.147	0.113	0.46088
3790.00	2.6385	3.300	2.421	0.147	0.113	0.46028
3800.00	2.6316	3.297	2.419	0.147	0.113	0.45993
3810.00	2.6247	3.293	2.415	0.146	0.113	0.45938
3820.00	2.6178	3.293	2.414	0.146	0.113	0.45931
3830.00	2.6110	3.287	2.411	0.146	0.112	0.45883
3840.00	2.6042	3.284	2.406	0.146	0.112	0.45815
3850.00	2.5974	3.281	2.403	0.146	0.112	0.45782
3860.00	2.5907	3.277	2.401	0.146	0.112	0.45749
3870.00	2.5840	3.274	2.397	0.145	0.112	0.45692
3880.00	2.5773	3.271	2.393	0.145	0.111	0.45642
3890.00	2.5707	3.270	2.390	0.145	0.111	0.45611
3900.00	2.5641	3.265	2.388	0.145	0.111	0.45573
3910.00	2.5575	3.265	2.385	0.145	0.111	0.45538
3920.00	2.5510	3.259	2.384	0.145	0.111	0.45514
3930.00	2.5445	3.255	2.377	0.144	0.110	0.45426
3940.00	2.5381	3.255	2.375	0.144	0.110	0.45398
3950.00	2.5316	3.252	2.372	0.144	0.110	0.45364
3960.00	2.5253	3.249	2.369	0.144	0.110	0.45320
3970.00	2.5189	3.245	2.367	0.144	0.110	0.45286
3980.00	2.5126	3.243	2.364	0.143	0.110	0.45250
3990.00	2.5063	3.238	2.364	0.143	0.109	0.45232
4000.00	2.5000	3.234	2.358	0.143	0.109	0.45152
4016.06	2.4900	3.231	2.352	0.143	0.109	0.45083
4032.26	2.4800	3.228	2.348	0.142	0.109	0.45025
4048.58	2.4700	3.223	2.344	0.142	0.109	0.44969
4065.04	2.4600	3.218	2.339	0.142	0.108	0.44903
4081.63	2.4500	3.214	2.335	0.142	0.108	0.44842
4098.36	2.4400	3.210	2.331	0.141	0.108	0.44784
4115.23	2.4300	3.206	2.326	0.141	0.107	0.44723
4132.23	2.4200	3.202	2.322	0.141	0.107	0.44660
4149.38	2.4100	3.197	2.318	0.141	0.107	0.44607
4166.67	2.4000	3.193	2.314	0.140	0.107	0.44548
4184.10	2.3900	3.188	2.311	0.140	0.106	0.44495
4201.68	2.3800	3.182	2.306	0.140	0.106	0.44432
4219.41	2.3700	3.177	2.302	0.139	0.106	0.44363
4237.29	2.3600	3.173	2.296	0.139	0.105	0.44288
4255.32	2.3500	3.169	2.292	0.139	0.105	0.44226
4273.50	2.3400	3.164	2.288	0.139	0.105	0.44166
4291.85	2.3300	3.160	2.283	0.138	0.105	0.44101

WN	WL	N	K	DN	DK	R
4310.34	2.3200	3.155	2.279	0.138	0.104	0.44035
4329.00	2.3100	3.151	2.274	0.138	0.104	0.43970
4347.83	2.3000	3.147	2.270	0.137	0.104	0.43915
4366.81	2.2900	3.142	2.266	0.137	0.104	0.43849
4385.96	2.2800	3.138	2.261	0.137	0.103	0.43783
4405.29	2.2700	3.135	2.257	0.137	0.103	0.43725
4424.78	2.2600	3.132	2.253	0.136	0.103	0.43675
4444.44	2.2500	3.128	2.250	0.136	0.103	0.43629
4464.29	2.2400	3.123	2.247	0.136	0.102	0.43580
4484.30	2.2300	3.118	2.244	0.136	0.102	0.43525
4504.50	2.2200	3.114	2.240	0.136	0.102	0.43470
4524.89	2.2100	3.109	2.237	0.135	0.102	0.43417
4545.45	2.2000	3.104	2.233	0.135	0.101	0.43358
4566.21	2.1900	3.100	2.229	0.135	0.101	0.43300
4587.16	2.1800	3.096	2.226	0.135	0.101	0.43255
4608.29	2.1700	3.090	2.223	0.134	0.100	0.43197
4629.63	2.1600	3.086	2.219	0.134	0.100	0.43138
4651.16	2.1500	3.082	2.216	0.134	0.100	0.43087
4672.90	2.1400	3.078	2.213	0.134	0.100	0.43045
4694.84	2.1300	3.072	2.210	0.133	0.099	0.42995
4716.98	2.1200	3.068	2.207	0.133	0.099	0.42945
4739.34	2.1100	3.063	2.204	0.133	0.099	0.42895
4761.90	2.1000	3.058	2.202	0.133	0.098	0.42850
4784.69	2.0900	3.052	2.199	0.133	0.098	0.42805
4807.69	2.0800	3.047	2.197	0.132	0.098	0.42761
4830.92	2.0700	3.041	2.194	0.132	0.097	0.42708
4854.37	2.0600	3.035	2.191	0.132	0.097	0.42655
4878.05	2.0500	3.029	2.189	0.132	0.097	0.42605
4901.96	2.0400	3.023	2.186	0.131	0.096	0.42552
4926.11	2.0300	3.017	2.182	0.131	0.096	0.42490
4950.50	2.0200	3.011	2.179	0.131	0.096	0.42429
4975.12	2.0100	3.007	2.174	0.131	0.095	0.42360
5000.00	2.0000	3.003	2.176	0.131	0.095	0.42373
5025.13	1.9900	2.992	2.175	0.130	0.095	0.42323
5050.51	1.9800	2.986	2.170	0.130	0.094	0.42243
5076.14	1.9700	2.979	2.166	0.130	0.094	0.42179
5102.04	1.9600	2.973	2.163	0.130	0.093	0.42118
5128.21	1.9500	2.966	2.160	0.129	0.093	0.42065
5154.64	1.9400	2.959	2.157	0.129	0.093	0.42004
5181.35	1.9300	2.952	2.153	0.129	0.092	0.41936
5208.33	1.9200	2.946	2.149	0.129	0.092	0.41871
5235.60	1.9100	2.939	2.146	0.128	0.091	0.41808
5263.16	1.9000	2.933	2.142	0.128	0.091	0.41745
5291.01	1.8900	2.927	2.139	0.128	0.091	0.41686
5319.15	1.8800	2.919	2.136	0.127	0.090	0.41624
5347.59	1.8700	2.914	2.131	0.127	0.090	0.41555
5376.34	1.8600	2.910	2.130	0.127	0.090	0.41531
5405.41	1.8500	2.903	2.131	0.127	0.089	0.41515
5434.78	1.8400	2.895	2.133	0.127	0.089	0.41518
5464.48	1.8300	2.881	2.133	0.127	0.088	0.41473

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.869	2.125	0.126	0.087	0.41342
5524.86	1.8100	2.860	2.120	0.126	0.087	0.41256
5555.56	1.8000	2.851	2.115	0.125	0.086	0.41160
5586.59	1.7900	2.843	2.109	0.125	0.086	0.41065
5617.98	1.7800	2.835	2.105	0.125	0.085	0.40987
5649.72	1.7700	2.826	2.100	0.124	0.085	0.40900
5681.82	1.7600	2.817	2.095	0.124	0.084	0.40810
5714.29	1.7500	2.809	2.090	0.124	0.084	0.40717
5747.13	1.7400	2.800	2.085	0.123	0.083	0.40627
5780.35	1.7300	2.792	2.080	0.123	0.083	0.40531
5813.95	1.7200	2.784	2.074	0.122	0.082	0.40437
5847.95	1.7100	2.775	2.069	0.122	0.082	0.40345
5882.35	1.7000	2.768	2.064	0.122	0.081	0.40252
5917.16	1.6900	2.760	2.059	0.121	0.081	0.40170
5952.38	1.6800	2.751	2.054	0.121	0.080	0.40070
5988.02	1.6700	2.742	2.049	0.121	0.080	0.39976
6024.10	1.6600	2.733	2.043	0.120	0.079	0.39874
6060.61	1.6500	2.726	2.037	0.120	0.079	0.39770
6097.56	1.6400	2.717	2.031	0.119	0.078	0.39669
6134.97	1.6300	2.709	2.026	0.119	0.078	0.39569
6172.84	1.6200	2.701	2.020	0.119	0.077	0.39475
6211.18	1.6100	2.693	2.015	0.118	0.077	0.39377
6250.00	1.6000	2.684	2.010	0.118	0.076	0.39282
6289.31	1.5900	2.674	2.003	0.118	0.076	0.39164
6329.11	1.5800	2.668	1.996	0.117	0.076	0.39046
6369.43	1.5700	2.660	1.992	0.117	0.075	0.38964
6410.26	1.5600	2.651	1.986	0.116	0.075	0.38853
6451.61	1.5500	2.642	1.980	0.116	0.074	0.38747
6493.51	1.5400	2.633	1.973	0.116	0.074	0.38624
6535.95	1.5300	2.626	1.967	0.115	0.073	0.38516
6578.95	1.5200	2.617	1.962	0.115	0.073	0.38420
6622.52	1.5100	2.608	1.956	0.115	0.072	0.38312
6666.67	1.5000	2.599	1.950	0.114	0.072	0.38197
6711.41	1.4900	2.590	1.944	0.114	0.071	0.38081
6756.76	1.4800	2.581	1.937	0.113	0.071	0.37955
6802.72	1.4700	2.572	1.930	0.113	0.070	0.37828
6849.32	1.4600	2.564	1.923	0.112	0.070	0.37700
6896.55	1.4500	2.555	1.916	0.112	0.069	0.37578
6944.44	1.4400	2.547	1.909	0.112	0.069	0.37446
6993.01	1.4300	2.539	1.902	0.111	0.068	0.37323
7042.25	1.4200	2.531	1.896	0.111	0.068	0.37206
7092.20	1.4100	2.522	1.889	0.110	0.068	0.37080
7142.86	1.4000	2.513	1.882	0.110	0.067	0.36962
7194.24	1.3900	2.504	1.876	0.109	0.067	0.36839
7246.38	1.3800	2.495	1.869	0.109	0.066	0.36710
7299.27	1.3700	2.486	1.862	0.109	0.066	0.36579
7352.94	1.3600	2.477	1.855	0.108	0.065	0.36445
7407.41	1.3500	2.468	1.848	0.108	0.065	0.36307
7462.69	1.3400	2.458	1.841	0.107	0.064	0.36174
7518.80	1.3300	2.449	1.833	0.107	0.064	0.36024



WN	WL	N	K	DN	DK	R
7575.76	1.3200	2.440	1.825	0.106	0.063	0.35874
7633.59	1.3100	2.430	1.817	0.106	0.063	0.35725
7692.31	1.3000	2.421	1.808	0.105	0.062	0.35565
7751.94	1.2900	2.412	1.800	0.105	0.062	0.35410
7812.50	1.2800	2.403	1.792	0.104	0.061	0.35257
7874.02	1.2700	2.395	1.783	0.104	0.061	0.35100
7936.51	1.2600	2.385	1.775	0.103	0.060	0.34941
8000.00	1.2500	2.376	1.766	0.103	0.060	0.34770
8064.52	1.2400	2.368	1.757	0.102	0.060	0.34602
8130.08	1.2300	2.359	1.748	0.102	0.059	0.34433
8196.72	1.2200	2.351	1.739	0.101	0.059	0.34264
8264.46	1.2100	2.345	1.729	0.101	0.059	0.34082
8333.33	1.2000	2.337	1.724	0.100	0.058	0.33987
8403.36	1.1900	2.324	1.716	0.100	0.057	0.33819
8474.58	1.1800	2.316	1.706	0.099	0.057	0.33626
8547.01	1.1700	2.307	1.697	0.099	0.057	0.33445
8620.69	1.1600	2.298	1.687	0.098	0.056	0.33258
8695.65	1.1500	2.290	1.678	0.098	0.056	0.33075
8771.93	1.1400	2.281	1.668	0.097	0.055	0.32893
8849.56	1.1300	2.271	1.658	0.097	0.055	0.32692
8928.57	1.1200	2.263	1.647	0.096	0.055	0.32485
9009.01	1.1100	2.256	1.637	0.095	0.054	0.32288
9090.91	1.1000	2.248	1.627	0.095	0.054	0.32097
9174.31	1.0900	2.240	1.617	0.094	0.054	0.31901
9259.26	1.0800	2.232	1.607	0.094	0.053	0.31705
9345.79	1.0700	2.225	1.596	0.093	0.053	0.31511
9433.96	1.0600	2.217	1.587	0.093	0.053	0.31320
9523.81	1.0500	2.209	1.576	0.092	0.052	0.31116
9615.38	1.0400	2.202	1.566	0.092	0.052	0.30920
9708.74	1.0300	2.195	1.556	0.091	0.052	0.30717
9803.92	1.0200	2.187	1.545	0.090	0.052	0.30507
9900.99	1.0100	2.180	1.535	0.090	0.051	0.30301
10000.00	1.0000	2.173	1.525	0.089	0.051	0.30105
10101.01	0.9900	2.166	1.514	0.089	0.051	0.29895
10204.08	0.9800	2.159	1.504	0.088	0.050	0.29695
10309.28	0.9700	2.152	1.494	0.088	0.050	0.29493
10416.67	0.9600	2.145	1.483	0.087	0.050	0.29276
10526.32	0.9500	2.138	1.473	0.086	0.050	0.29062
10638.30	0.9400	2.132	1.462	0.086	0.049	0.28850
10752.69	0.9300	2.126	1.451	0.085	0.049	0.28640
10869.57	0.9200	2.119	1.441	0.085	0.049	0.28426
10989.01	0.9100	2.113	1.429	0.084	0.049	0.28202
11111.11	0.9000	2.108	1.418	0.083	0.049	0.27990
11235.96	0.8900	2.103	1.408	0.083	0.048	0.27795
11363.64	0.8800	2.098	1.398	0.082	0.048	0.27589
11494.25	0.8700	2.094	1.387	0.082	0.048	0.27387
11627.91	0.8600	2.091	1.380	0.081	0.048	0.27248
11764.71	0.8500	2.085	1.373	0.081	0.048	0.27093
11904.76	0.8400	2.079	1.365	0.080	0.048	0.26930
12048.19	0.8300	2.073	1.357	0.080	0.047	0.26754

WN	WL	N	K	DN	DK	R
12195.12	0.8200	2.067	1.349	0.079	0.047	0.26587
12345.68	0.8100	2.060	1.341	0.079	0.047	0.26402
12500.00	0.8000	2.055	1.334	0.079	0.047	0.26268
12658.23	0.7900	2.045	1.329	0.078	0.046	0.26119
12820.51	0.7800	2.036	1.319	0.078	0.046	0.25910
12987.01	0.7700	2.028	1.310	0.077	0.045	0.25701
13157.89	0.7600	2.019	1.300	0.077	0.045	0.25486
13333.33	0.7500	2.012	1.290	0.076	0.045	0.25265
13513.51	0.7400	2.004	1.280	0.075	0.044	0.25054
13698.63	0.7300	1.997	1.270	0.075	0.044	0.24836
13888.89	0.7200	1.990	1.260	0.074	0.044	0.24619
14084.51	0.7100	1.982	1.250	0.074	0.044	0.24402
14285.71	0.7000	1.975	1.240	0.073	0.043	0.24181
14492.75	0.6900	1.968	1.230	0.073	0.043	0.23959
14705.88	0.6800	1.961	1.219	0.072	0.043	0.23732
14925.37	0.6700	1.955	1.208	0.071	0.043	0.23490
15151.52	0.6600	1.951	1.198	0.071	0.042	0.23296
15384.62	0.6500	1.946	1.191	0.070	0.042	0.23125
15625.00	0.6400	1.938	1.184	0.070	0.042	0.22963
15873.02	0.6300	1.930	1.173	0.069	0.042	0.22721
16129.03	0.6200	1.924	1.163	0.069	0.041	0.22509
16393.44	0.6100	1.918	1.154	0.068	0.041	0.22310
16666.67	0.6000	1.912	1.146	0.068	0.041	0.22115
16949.15	0.5900	1.906	1.137	0.067	0.041	0.21923
17241.38	0.5800	1.899	1.130	0.067	0.040	0.21749
17543.86	0.5700	1.891	1.120	0.066	0.040	0.21522
17857.14	0.5600	1.887	1.110	0.066	0.040	0.21322
18181.82	0.5500	1.881	1.103	0.065	0.040	0.21162
18518.52	0.5400	1.874	1.096	0.065	0.039	0.20989
18867.92	0.5300	1.868	1.089	0.064	0.039	0.20819
19230.77	0.5200	1.861	1.082	0.064	0.039	0.20655
19607.84	0.5100	1.854	1.076	0.064	0.039	0.20491
20000.00	0.5000	1.846	1.070	0.063	0.038	0.20340
20408.16	0.4900	1.837	1.065	0.063	0.038	0.20183
20833.33	0.4800	1.826	1.056	0.062	0.037	0.19965
21276.60	0.4700	1.818	1.046	0.062	0.037	0.19735
21739.13	0.4600	1.812	1.039	0.061	0.037	0.19548
22222.22	0.4500	1.805	1.031	0.061	0.037	0.19365
22727.27	0.4400	1.799	1.024	0.061	0.036	0.19205
23255.81	0.4300	1.794	1.019	0.060	0.036	0.19066
23809.52	0.4200	1.789	1.015	0.060	0.036	0.18960
24390.24	0.4100	1.782	1.013	0.060	0.036	0.18884
25000.00	0.4000	1.774	1.012	0.060	0.035	0.18812
25641.03	0.3900	1.764	1.009	0.060	0.035	0.18716
26315.79	0.3800	1.755	1.007	0.060	0.034	0.18610
27027.03	0.3700	1.748	1.004	0.059	0.034	0.18519
27777.78	0.3600	1.744	1.004	0.059	0.034	0.18489
28571.43	0.3500	1.742	1.009	0.060	0.034	0.18571
29411.76	0.3400	1.739	1.023	0.060	0.033	0.18838
30303.03	0.3300	1.724	1.042	0.062	0.032	0.19138

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.710	1.057	0.062	0.031	0.19373
32258.06	0.3100	1.697	1.083	0.064	0.030	0.19841
33333.33	0.3000	1.673	1.119	0.066	0.028	0.20513
34482.76	0.2900	1.638	1.162	0.068	0.025	0.21368
35714.29	0.2800	1.585	1.215	0.070	0.020	0.22528
37037.04	0.2700	1.498	1.276	0.076	0.027	0.24083
38461.54	0.2600	1.358	1.323	0.080	0.038	0.25941
40000.00	0.2500	1.174	1.298	0.079	0.047	0.27029
41666.67	0.2400	1.021	1.194	0.073	0.050	0.26152
43478.26	0.2300	0.924	1.065	0.066	0.049	0.23868
45454.55	0.2200	0.860	0.937	0.059	0.046	0.20986
47619.05	0.2100	0.821	0.820	0.054	0.043	0.17914

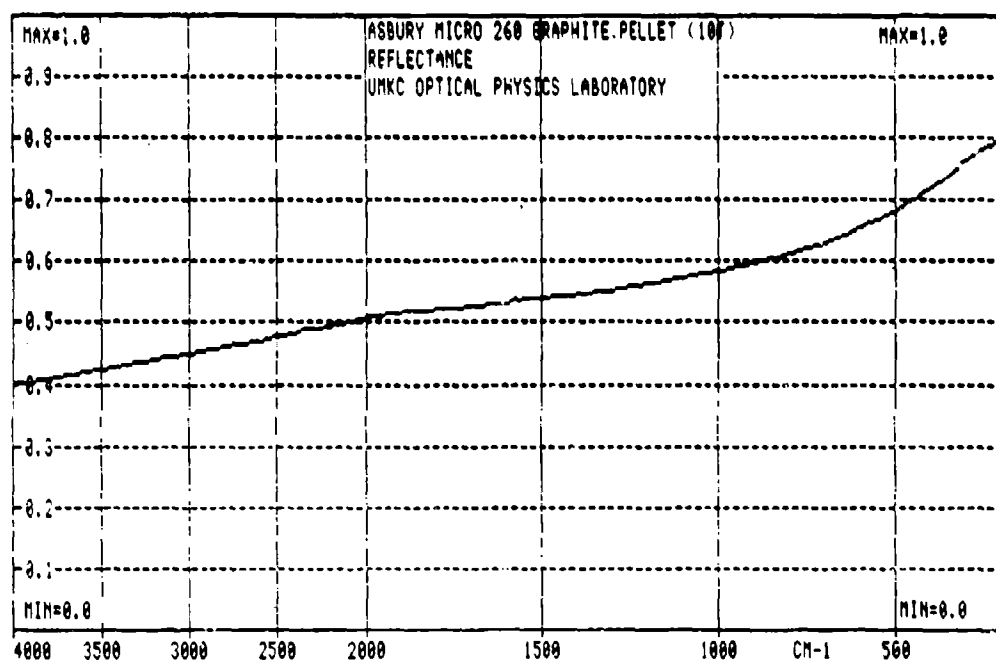


Figure 84. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of the Asbury micro 260 graphite pellet.

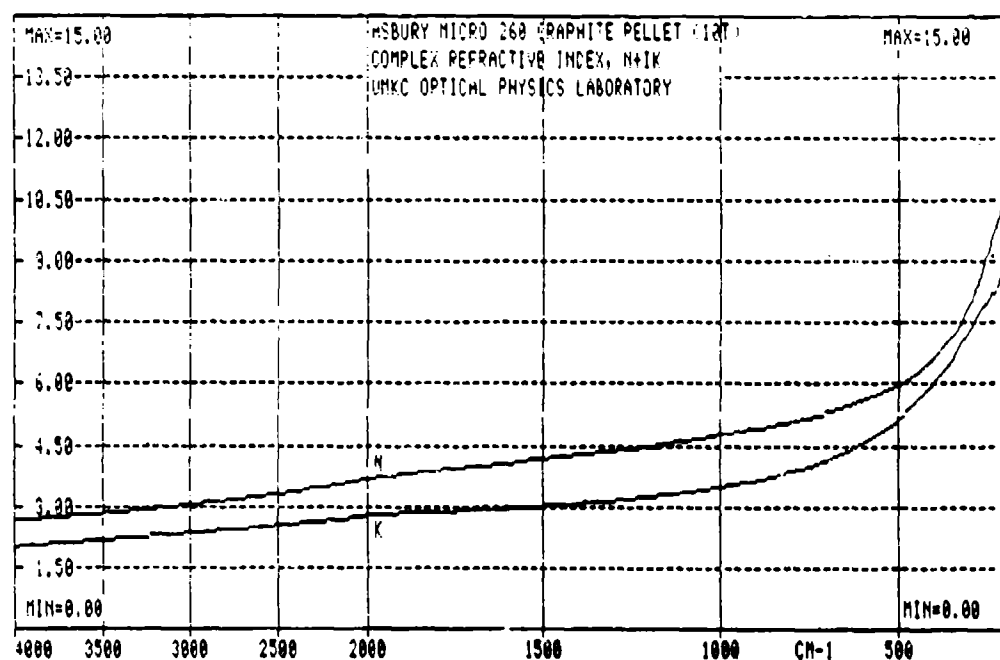


Figure 85. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for the Asbury micro 260 graphite pellet.

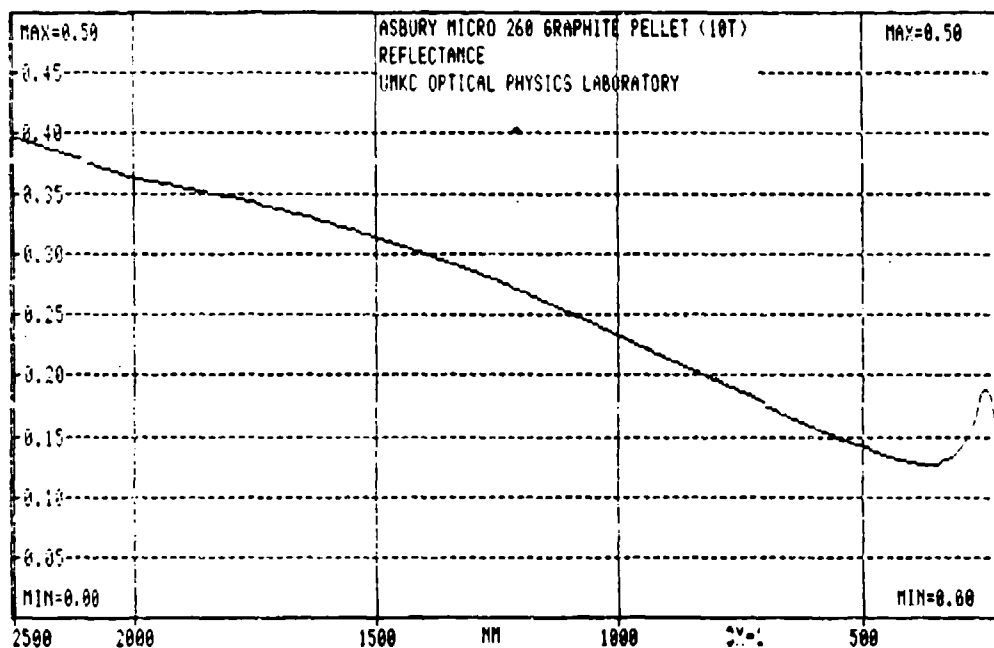


Figure 86. The uv-vis-nir (2,500–200 nm) reflectance spectrum of the Asbury micro 260 graphite pellet.

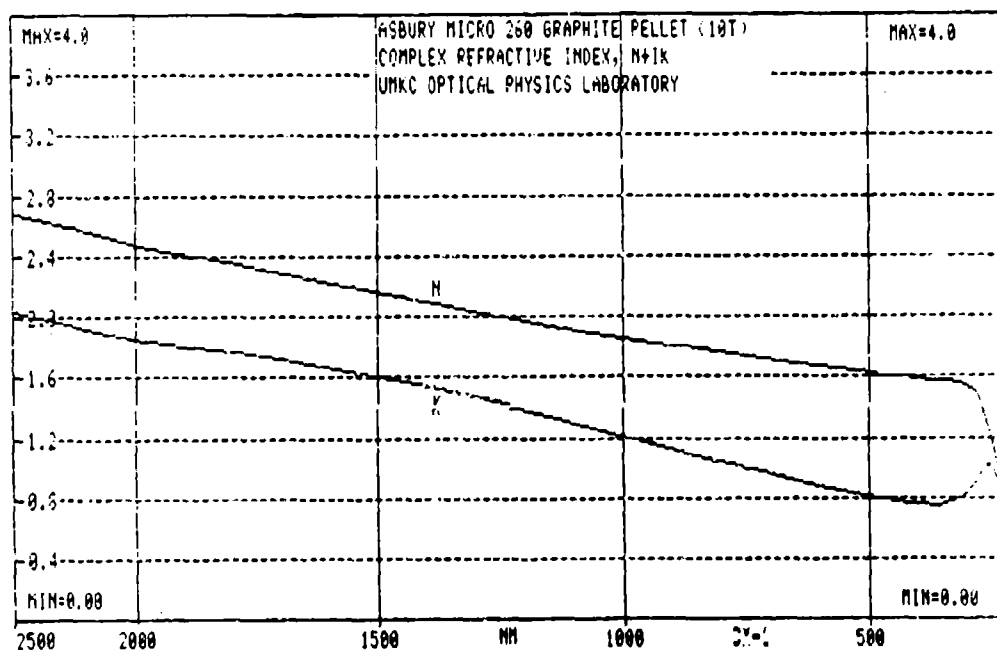


Figure 87. The uv-vis-nir (2,500–210 nm) complex refractive indices  $n$  and  $k$  for the Asbury micro 260 graphite pellet.

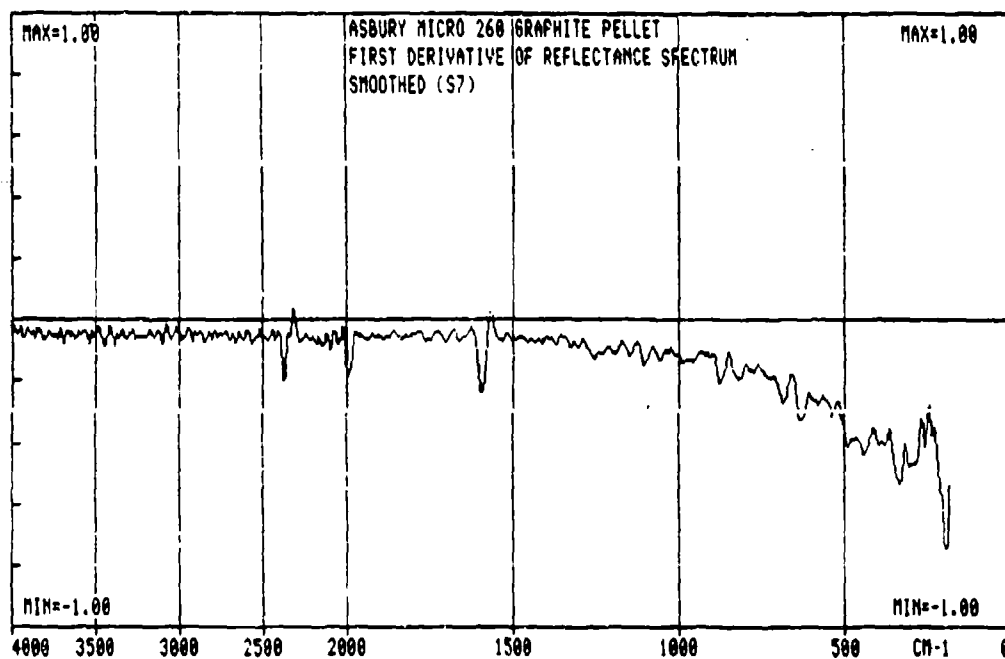


Figure 88. The first derivative of the infrared reflectance spectrum of the Asbury micro 260 graphite pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	12.433	9.539	0.799	1.322	0.81785
190.00	52.6316	11.354	9.407	0.692	1.180	0.81273
200.00	50.0000	10.837	8.888	0.654	1.072	0.80331
210.00	47.6190	10.478	8.667	0.624	1.010	0.79856
220.00	45.4545	10.079	8.493	0.590	0.947	0.79431
230.00	43.4783	9.809	8.196	0.572	0.894	0.78799
240.00	41.6667	9.632	8.238	0.555	0.874	0.78824
250.00	40.0000	9.203	8.039	0.521	0.809	0.78306
260.00	38.4615	9.032	7.910	0.509	0.781	0.77989
270.00	37.0370	8.719	7.833	0.484	0.738	0.77743
280.00	35.7143	8.443	7.671	0.465	0.696	0.77312
290.00	34.4828	8.216	7.528	0.449	0.662	0.76923
300.00	33.3333	7.970	7.361	0.433	0.626	0.76456
310.00	32.2581	7.798	7.193	0.423	0.599	0.75982
320.00	31.2500	7.616	7.057	0.411	0.573	0.75576
330.00	30.3030	7.456	6.925	0.401	0.550	0.75174
340.00	29.4118	7.269	6.767	0.390	0.524	0.74674
350.00	28.5714	7.165	6.580	0.385	0.507	0.74082
360.00	27.7778	7.073	6.474	0.380	0.494	0.73727
370.00	27.0270	6.960	6.362	0.373	0.478	0.73336
380.00	26.3158	6.864	6.257	0.367	0.465	0.72964
390.00	25.6410	6.753	6.154	0.361	0.450	0.72581
400.00	25.0000	6.665	6.046	0.356	0.438	0.72178
410.00	24.3902	6.583	5.955	0.351	0.427	0.71828
420.00	23.8095	6.496	5.863	0.346	0.416	0.71463
430.00	23.2538	6.403	5.774	0.340	0.404	0.71102
440.00	22.7273	6.315	5.670	0.335	0.393	0.70672
450.00	22.2222	6.248	5.576	0.331	0.385	0.70275
460.00	21.7391	6.184	5.484	0.327	0.376	0.69881
470.00	21.2766	6.128	5.406	0.324	0.369	0.69538
480.00	20.8333	6.065	5.317	0.320	0.361	0.69134
490.00	20.4082	6.013	5.234	0.316	0.355	0.68761
500.00	20.0000	5.965	5.149	0.313	0.349	0.68363
510.00	19.6078	5.939	5.076	0.311	0.345	0.68029
520.00	19.2308	5.902	5.022	0.309	0.341	0.67769
530.00	18.8679	5.858	4.962	0.306	0.335	0.67472
540.00	18.5185	5.816	4.906	0.303	0.331	0.67187
550.00	18.1818	5.778	4.849	0.300	0.326	0.66897
560.00	17.8571	5.746	4.798	0.298	0.322	0.66637
570.00	17.5439	5.705	4.748	0.296	0.318	0.66370
580.00	17.2414	5.665	4.698	0.293	0.313	0.66099
590.00	16.9492	5.625	4.651	0.290	0.309	0.65837
600.00	16.6667	5.594	4.600	0.288	0.305	0.65565
610.00	16.3934	5.558	4.559	0.286	0.301	0.65331
620.00	16.1290	5.522	4.511	0.283	0.297	0.65057
630.00	15.8730	5.479	4.469	0.280	0.293	0.64808
640.00	15.6250	5.447	4.404	0.278	0.289	0.64439
650.00	15.3846	5.433	4.357	0.276	0.287	0.64186
660.00	15.1515	5.420	4.320	0.275	0.285	0.63976
670.00	14.9254	5.392	4.293	0.273	0.283	0.63806

WN	WL	N	K	DN	DK	R
680.00	14.7059	5.358	4.256	0.271	0.279	0.63576
690.00	14.4928	5.326	4.210	0.269	0.276	0.63296
700.00	14.2857	5.313	4.165	0.267	0.274	0.63036
710.00	14.0845	5.296	4.133	0.266	0.272	0.62843
720.00	13.8889	5.276	4.103	0.264	0.270	0.62655
730.00	13.6986	5.259	4.071	0.263	0.268	0.62457
740.00	13.5135	5.240	4.044	0.261	0.266	0.62284
750.00	13.3333	5.222	4.015	0.260	0.264	0.62097
760.00	13.1579	5.207	3.991	0.259	0.262	0.61942
770.00	12.9870	5.186	3.971	0.257	0.260	0.61803
780.00	12.8205	5.160	3.943	0.256	0.258	0.61611
790.00	12.6582	5.144	3.918	0.254	0.256	0.61442
800.00	12.5000	5.124	3.900	0.253	0.254	0.61311
810.00	12.3457	5.098	3.877	0.251	0.252	0.61139
820.00	12.1951	5.075	3.846	0.250	0.250	0.60926
830.00	12.0482	5.061	3.819	0.248	0.248	0.60750
840.00	11.9048	5.045	3.797	0.247	0.247	0.60596
850.00	11.7647	5.032	3.775	0.246	0.245	0.60446
860.00	11.6279	5.018	3.767	0.245	0.244	0.60374
870.00	11.4943	4.977	3.744	0.243	0.241	0.60177
880.00	11.3636	4.968	3.702	0.242	0.239	0.59912
890.00	11.2360	4.959	3.686	0.241	0.238	0.59798
900.00	11.1111	4.947	3.666	0.240	0.237	0.59656
910.00	10.9890	4.935	3.651	0.239	0.236	0.59543
920.00	10.8696	4.920	3.636	0.238	0.235	0.59429
930.00	10.7527	4.907	3.620	0.237	0.233	0.59307
940.00	10.6383	4.891	3.608	0.236	0.232	0.59208
950.00	10.5263	4.874	3.595	0.235	0.230	0.59096
960.00	10.4167	4.856	3.580	0.234	0.229	0.58968
970.00	10.3093	4.839	3.561	0.233	0.227	0.58822
980.00	10.2041	4.822	3.546	0.232	0.226	0.58700
990.00	10.1010	4.806	3.531	0.230	0.224	0.58574
1000.00	10.0000	4.791	3.513	0.229	0.223	0.58432
1010.00	9.9010	4.784	3.497	0.229	0.222	0.58316
1020.00	9.8039	4.765	3.488	0.228	0.221	0.58221
1030.00	9.7087	4.753	3.471	0.227	0.220	0.58091
1040.00	9.6154	4.741	3.464	0.226	0.219	0.58024
1050.00	9.5238	4.721	3.450	0.225	0.217	0.57895
1060.00	9.4340	4.706	3.434	0.224	0.216	0.57765
1070.00	9.3458	4.691	3.421	0.223	0.214	0.57649
1080.00	9.2593	4.681	3.409	0.222	0.214	0.57553
1090.00	9.1743	4.665	3.402	0.221	0.212	0.57474
1100.00	9.0909	4.643	3.388	0.220	0.211	0.57336
1110.00	9.0090	4.631	3.368	0.219	0.209	0.57181
1120.00	8.9286	4.621	3.354	0.218	0.208	0.57066
1130.00	8.8496	4.614	3.344	0.218	0.208	0.56987
1140.00	8.7719	4.600	3.339	0.217	0.207	0.56924
1150.00	8.6957	4.582	3.323	0.216	0.205	0.56779
1160.00	8.6207	4.572	3.310	0.215	0.204	0.56672
1170.00	8.5470	4.562	3.304	0.215	0.204	0.56604



WN	WL	N	K	DN	DK	R
1180.00	8.4746	4.549	3.296	0.214	0.203	0.56524
1190.00	8.4034	4.534	3.285	0.213	0.201	0.56421
1200.00	8.3333	4.519	3.272	0.212	0.200	0.56300
1210.00	8.2645	4.507	3.262	0.211	0.199	0.56207
1220.00	8.1967	4.494	3.252	0.211	0.198	0.56112
1230.00	8.1301	4.481	3.243	0.210	0.197	0.56018
1240.00	8.0645	4.466	3.230	0.209	0.196	0.55898
1250.00	8.0000	4.456	3.217	0.208	0.195	0.55779
1260.00	7.9365	4.441	3.207	0.207	0.194	0.55676
1270.00	7.8740	4.433	3.188	0.207	0.193	0.55529
1280.00	7.8125	4.430	3.185	0.206	0.193	0.55494
1290.00	7.7519	4.417	3.175	0.206	0.192	0.55398
1300.00	7.6923	4.409	3.165	0.205	0.191	0.55309
1310.00	7.6336	4.398	3.158	0.204	0.190	0.55237
1320.00	7.5758	4.388	3.149	0.204	0.190	0.55147
1330.00	7.5188	4.378	3.142	0.203	0.189	0.55076
1340.00	7.4627	4.372	3.131	0.203	0.188	0.54980
1350.00	7.4074	4.366	3.130	0.202	0.188	0.54957
1360.00	7.3529	4.352	3.123	0.202	0.187	0.54873
1370.00	7.2993	4.342	3.118	0.201	0.186	0.54816
1380.00	7.2464	4.332	3.109	0.201	0.185	0.54732
1390.00	7.1942	4.323	3.106	0.200	0.184	0.54684
1400.00	7.1429	4.309	3.100	0.199	0.184	0.54609
1410.00	7.0922	4.301	3.094	0.199	0.183	0.54547
1420.00	7.0423	4.288	3.088	0.198	0.182	0.54472
1430.00	6.9930	4.277	3.080	0.198	0.181	0.54387
1440.00	6.9444	4.268	3.074	0.197	0.180	0.54323
1450.00	6.8966	4.258	3.068	0.197	0.180	0.54256
1460.00	6.8493	4.247	3.062	0.196	0.179	0.54188
1470.00	6.8027	4.237	3.055	0.196	0.178	0.54112
1480.00	6.7568	4.228	3.051	0.195	0.177	0.54060
1490.00	6.7114	4.216	3.047	0.195	0.177	0.54005
1500.00	6.6667	4.205	3.040	0.194	0.176	0.53923
1510.00	6.6225	4.197	3.034	0.194	0.175	0.53860
1520.00	6.5789	4.187	3.030	0.193	0.174	0.53802
1530.00	6.5359	4.177	3.027	0.193	0.174	0.53761
1540.00	6.4935	4.163	3.020	0.192	0.173	0.53669
1550.00	6.4516	4.159	3.014	0.192	0.172	0.53612
1560.00	6.4103	4.148	3.013	0.191	0.172	0.53584
1570.00	6.3694	4.141	3.017	0.191	0.171	0.53599
1580.00	6.3291	4.120	3.026	0.191	0.170	0.53623
1590.00	6.2893	4.083	3.015	0.190	0.167	0.53458
1600.00	6.2500	4.067	2.982	0.188	0.166	0.53157
1610.00	6.2112	4.074	2.966	0.188	0.166	0.53046
1620.00	6.1728	4.073	2.965	0.187	0.166	0.53032
1630.00	6.1350	4.065	2.957	0.187	0.166	0.52952
1640.00	6.0976	4.059	2.957	0.187	0.165	0.52933
1650.00	6.0606	4.046	2.952	0.186	0.164	0.52863
1660.00	6.0241	4.040	2.946	0.186	0.164	0.52802
1670.00	5.9880	4.030	2.942	0.185	0.163	0.52744

WN	WL	N	K	DN	DK	R
1680.00	5.9524	4.026	2.937	0.185	0.163	0.52697
1690.00	5.9172	4.013	2.938	0.185	0.162	0.52675
1700.00	5.8824	4.002	2.929	0.184	0.161	0.52578
1710.00	5.8480	3.994	2.924	0.184	0.160	0.52518
1720.00	5.8140	3.986	2.922	0.183	0.160	0.52478
1730.00	5.7803	3.976	2.918	0.183	0.159	0.52428
1740.00	5.7471	3.967	2.915	0.183	0.159	0.52384
1750.00	5.7143	3.954	2.912	0.182	0.158	0.52324
1760.00	5.6818	3.945	2.903	0.182	0.157	0.52233
1770.00	5.6497	3.938	2.900	0.181	0.156	0.52191
1780.00	5.6180	3.929	2.895	0.181	0.156	0.52126
1790.00	5.5866	3.921	2.893	0.181	0.155	0.52094
1800.00	5.5556	3.910	2.891	0.180	0.154	0.52048
1810.00	5.5249	3.901	2.886	0.180	0.154	0.51982
1820.00	5.4945	3.891	2.884	0.179	0.153	0.51943
1830.00	5.4645	3.880	2.879	0.179	0.152	0.51879
1840.00	5.4348	3.870	2.875	0.178	0.152	0.51819
1850.00	5.4054	3.861	2.871	0.178	0.151	0.51762
1860.00	5.3763	3.852	2.868	0.178	0.150	0.51717
1870.00	5.3476	3.841	2.867	0.177	0.150	0.51683
1880.00	5.3191	3.829	2.861	0.177	0.149	0.51604
1890.00	5.2910	3.820	2.857	0.176	0.148	0.51552
1900.00	5.2632	3.809	2.853	0.176	0.147	0.51496
1910.00	5.2356	3.800	2.849	0.176	0.147	0.51435
1920.00	5.2083	3.789	2.846	0.175	0.146	0.51385
1930.00	5.1813	3.778	2.843	0.175	0.145	0.51333
1940.00	5.1546	3.766	2.838	0.174	0.144	0.51267
1950.00	5.1282	3.756	2.833	0.174	0.144	0.51195
1960.00	5.1020	3.746	2.830	0.173	0.143	0.51145
1970.00	5.0761	3.733	2.828	0.173	0.142	0.51100
1980.00	5.0505	3.720	2.823	0.172	0.141	0.51026
1990.00	5.0251	3.700	2.820	0.172	0.140	0.50962
2000.00	5.0000	3.681	2.798	0.170	0.139	0.50714
2010.00	4.9751	3.687	2.783	0.170	0.139	0.50588
2020.00	4.9505	3.683	2.781	0.170	0.139	0.50558
2030.00	4.9261	3.676	2.777	0.170	0.138	0.50511
2040.00	4.9020	3.665	2.770	0.169	0.137	0.50424
2050.00	4.8780	3.659	2.764	0.169	0.137	0.50352
2060.00	4.8544	3.650	2.758	0.168	0.136	0.50279
2070.00	4.8309	3.647	2.754	0.168	0.136	0.50232
2080.00	4.8077	3.637	2.755	0.168	0.135	0.50222
2090.00	4.7847	3.626	2.748	0.167	0.135	0.50127
2100.00	4.7619	3.617	2.742	0.167	0.134	0.50054
2110.00	4.7393	3.610	2.733	0.166	0.134	0.49953
2120.00	4.7170	3.606	2.730	0.166	0.133	0.49907
2130.00	4.6948	3.596	2.729	0.166	0.133	0.49879
2140.00	4.6729	3.582	2.719	0.165	0.132	0.49756
2150.00	4.6512	3.581	2.712	0.165	0.132	0.49686
2160.00	4.6296	3.571	2.712	0.164	0.131	0.49659
2170.00	4.6083	3.564	2.703	0.164	0.130	0.49555

WN	WL	N	K	DN	DK	R
2180.00	4.5872	3.557	2.699	0.164	0.130	0.49506
2190.00	4.5662	3.550	2.692	0.163	0.129	0.49416
2200.00	4.5455	3.544	2.686	0.163	0.129	0.49351
2210.00	4.5249	3.536	2.683	0.163	0.129	0.49300
2220.00	4.5045	3.528	2.676	0.162	0.128	0.49214
2230.00	4.4843	3.525	2.672	0.162	0.128	0.49164
2240.00	4.4643	3.517	2.669	0.162	0.127	0.49119
2250.00	4.4444	3.511	2.663	0.161	0.127	0.49051
2260.00	4.4248	3.504	2.659	0.161	0.126	0.48996
2270.00	4.4053	3.496	2.654	0.160	0.126	0.48925
2280.00	4.3860	3.491	2.647	0.160	0.126	0.48848
2290.00	4.3668	3.489	2.642	0.160	0.125	0.48793
2300.00	4.3478	3.486	2.639	0.160	0.125	0.48754
2310.00	4.3290	3.484	2.639	0.160	0.125	0.48749
2320.00	4.3103	3.477	2.643	0.160	0.125	0.48777
2330.00	4.2918	3.467	2.650	0.160	0.124	0.48817
2340.00	4.2735	3.447	2.649	0.159	0.123	0.48771
2350.00	4.2553	3.439	2.640	0.159	0.122	0.48656
2360.00	4.2373	3.429	2.645	0.158	0.121	0.48690
2370.00	4.2194	3.403	2.636	0.158	0.120	0.48545
2380.00	4.2017	3.391	2.614	0.156	0.119	0.48287
2390.00	4.1841	3.393	2.600	0.156	0.119	0.48143
2400.00	4.1667	3.392	2.595	0.156	0.119	0.48088
2410.00	4.1494	3.385	2.590	0.155	0.119	0.48034
2420.00	4.1322	3.382	2.587	0.155	0.118	0.47988
2430.00	4.1152	3.378	2.580	0.155	0.118	0.47901
2440.00	4.0984	3.374	2.576	0.155	0.118	0.47850
2450.00	4.0816	3.370	2.573	0.154	0.118	0.47818
2460.00	4.0650	3.359	2.571	0.154	0.117	0.47769
2470.00	4.0486	3.355	2.563	0.154	0.117	0.47679
2480.00	4.0323	3.350	2.561	0.153	0.116	0.47639
2490.00	4.0161	3.341	2.557	0.153	0.116	0.47583
2500.00	4.0000	3.337	2.551	0.153	0.115	0.47504
2510.00	3.9841	3.332	2.549	0.153	0.115	0.47473
2520.00	3.9683	3.327	2.544	0.152	0.115	0.47407
2530.00	3.9526	3.319	2.542	0.152	0.114	0.47367
2540.00	3.9370	3.312	2.536	0.152	0.114	0.47288
2550.00	3.9216	3.307	2.533	0.151	0.113	0.47244
2560.00	3.9063	3.299	2.527	0.151	0.113	0.47161
2570.00	3.8911	3.294	2.520	0.151	0.113	0.47082
2580.00	3.8760	3.290	2.515	0.150	0.112	0.47018
2590.00	3.8610	3.287	2.513	0.150	0.112	0.46991
2600.00	3.8462	3.281	2.511	0.150	0.112	0.46946
2610.00	3.8314	3.273	2.506	0.150	0.111	0.46884
2620.00	3.8168	3.268	2.502	0.149	0.111	0.46824
2630.00	3.8023	3.263	2.498	0.149	0.111	0.46767
2640.00	3.7879	3.258	2.494	0.149	0.110	0.46716
2650.00	3.7736	3.250	2.492	0.149	0.110	0.46678
2660.00	3.7594	3.242	2.486	0.148	0.109	0.46596
2670.00	3.7453	3.240	2.480	0.148	0.109	0.46520

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.236	2.478	0.148	0.109	0.46483
2690.00	3.7175	3.227	2.474	0.147	0.108	0.46420
2700.00	3.7037	3.223	2.468	0.147	0.108	0.46352
2710.00	3.6900	3.220	2.465	0.147	0.108	0.46305
2720.00	3.6765	3.215	2.462	0.147	0.108	0.46260
2730.00	3.6630	3.210	2.460	0.146	0.107	0.46229
2740.00	3.6496	3.203	2.455	0.146	0.107	0.46157
2750.00	3.6364	3.200	2.451	0.146	0.107	0.46106
2760.00	3.6232	3.192	2.450	0.146	0.106	0.46072
2770.00	3.6101	3.187	2.444	0.145	0.106	0.45994
2780.00	3.5971	3.184	2.441	0.145	0.106	0.45952
2790.00	3.5842	3.178	2.438	0.145	0.105	0.45912
2800.00	3.5714	3.172	2.435	0.145	0.105	0.45854
2810.00	3.5587	3.166	2.432	0.144	0.104	0.45818
2820.00	3.5461	3.161	2.427	0.144	0.104	0.45739
2830.00	3.5336	3.157	2.424	0.144	0.104	0.45695
2840.00	3.5211	3.148	2.422	0.144	0.103	0.45653
2850.00	3.5088	3.142	2.415	0.143	0.103	0.45558
2860.00	3.4965	3.139	2.410	0.143	0.103	0.45499
2870.00	3.4843	3.135	2.406	0.143	0.103	0.45446
2880.00	3.4722	3.130	2.404	0.143	0.102	0.45409
2890.00	3.4602	3.125	2.400	0.142	0.102	0.45351
2900.00	3.4483	3.121	2.396	0.142	0.102	0.45297
2910.00	3.4364	3.117	2.393	0.142	0.101	0.45254
2920.00	3.4247	3.111	2.390	0.142	0.101	0.45208
2930.00	3.4130	3.104	2.386	0.141	0.101	0.45136
2940.00	3.4014	3.104	2.380	0.141	0.101	0.45067
2950.00	3.3898	3.100	2.381	0.141	0.100	0.45072
2960.00	3.3784	3.092	2.377	0.141	0.100	0.45008
2970.00	3.3670	3.087	2.374	0.140	0.099	0.44956
2980.00	3.3557	3.083	2.370	0.140	0.099	0.44906
2990.00	3.3445	3.078	2.366	0.140	0.099	0.44844
3000.00	3.3333	3.075	2.361	0.140	0.099	0.44783
3010.00	3.3223	3.070	2.361	0.140	0.098	0.44771
3020.00	3.3113	3.065	2.357	0.139	0.098	0.44710
3030.00	3.3003	3.061	2.356	0.139	0.098	0.44689
3040.00	3.2895	3.053	2.353	0.139	0.097	0.44627
3050.00	3.2787	3.048	2.347	0.139	0.097	0.44553
3060.00	3.2680	3.046	2.345	0.138	0.097	0.44519
3070.00	3.2573	3.041	2.341	0.138	0.097	0.44463
3080.00	3.2468	3.039	2.339	0.138	0.097	0.44438
3090.00	3.2362	3.030	2.340	0.138	0.096	0.44429
3100.00	3.2258	3.023	2.334	0.138	0.096	0.44333
3110.00	3.2154	3.019	2.327	0.137	0.095	0.44243
3120.00	3.2051	3.018	2.325	0.137	0.095	0.44215
3130.00	3.1949	3.011	2.324	0.137	0.095	0.44194
3140.00	3.1847	3.006	2.320	0.137	0.094	0.44125
3150.00	3.1746	3.003	2.318	0.137	0.094	0.44097
3160.00	3.1646	2.996	2.313	0.136	0.094	0.44026
3170.00	3.1546	2.993	2.310	0.136	0.094	0.43979

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.989	2.308	0.136	0.093	0.43938
3190.00	3.1348	2.983	2.307	0.136	0.093	0.43922
3200.00	3.1250	2.976	2.301	0.135	0.093	0.43828
3210.00	3.1153	2.973	2.298	0.135	0.092	0.43785
3220.00	3.1056	2.968	2.296	0.135	0.092	0.43749
3230.00	3.0960	2.962	2.291	0.135	0.092	0.43677
3240.00	3.0864	2.959	2.287	0.134	0.092	0.43618
3250.00	3.0769	2.953	2.285	0.134	0.091	0.43577
3260.00	3.0675	2.949	2.280	0.134	0.091	0.43509
3270.00	3.0581	2.945	2.277	0.134	0.091	0.43459
3280.00	3.0488	2.942	2.273	0.134	0.091	0.43398
3290.00	3.0395	2.939	2.273	0.133	0.090	0.43391
3300.00	3.0303	2.930	2.269	0.133	0.090	0.43327
3310.00	3.0211	2.929	2.265	0.133	0.090	0.43269
3320.00	3.0120	2.922	2.263	0.133	0.089	0.43229
3330.00	3.0030	2.917	2.255	0.132	0.089	0.43125
3340.00	2.9940	2.916	2.253	0.132	0.089	0.43098
3350.00	2.9851	2.910	2.254	0.132	0.089	0.43087
3360.00	2.9762	2.904	2.248	0.132	0.088	0.43002
3370.00	2.9674	2.902	2.245	0.132	0.088	0.42955
3380.00	2.9586	2.895	2.242	0.131	0.088	0.42907
3390.00	2.9499	2.890	2.237	0.131	0.087	0.42833
3400.00	2.9412	2.885	2.231	0.131	0.087	0.42736
3410.00	2.9326	2.886	2.228	0.131	0.087	0.42711
3420.00	2.9240	2.881	2.226	0.130	0.087	0.42671
3430.00	2.9155	2.877	2.226	0.130	0.087	0.42654
3440.00	2.9070	2.869	2.222	0.130	0.086	0.42595
3450.00	2.8986	2.865	2.216	0.130	0.086	0.42505
3460.00	2.8902	2.860	2.211	0.129	0.086	0.42432
3470.00	2.8818	2.859	2.205	0.129	0.086	0.42348
3480.00	2.8736	2.857	2.205	0.129	0.086	0.42339
3490.00	2.8653	2.853	2.201	0.129	0.085	0.42274
3500.00	2.8571	2.850	2.200	0.129	0.085	0.42253
3510.00	2.8490	2.844	2.196	0.129	0.085	0.42187
3520.00	2.8409	2.841	2.193	0.128	0.085	0.42144
3530.00	2.8329	2.837	2.190	0.128	0.084	0.42105
3540.00	2.8249	2.830	2.186	0.128	0.084	0.42031
3550.00	2.8169	2.827	2.178	0.128	0.084	0.41924
3560.00	2.8090	2.827	2.176	0.127	0.084	0.41886
3570.00	2.8011	2.823	2.176	0.127	0.084	0.41889
3580.00	2.7933	2.818	2.171	0.127	0.083	0.41801
3590.00	2.7855	2.817	2.168	0.127	0.083	0.41761
3600.00	2.7778	2.812	2.166	0.127	0.083	0.41722
3610.00	2.7701	2.807	2.163	0.127	0.083	0.41674
3620.00	2.7624	2.803	2.158	0.126	0.083	0.41597
3630.00	2.7548	2.800	2.154	0.126	0.082	0.41539
3640.00	2.7473	2.797	2.150	0.126	0.082	0.41476
3650.00	2.7397	2.796	2.149	0.126	0.082	0.41467
3660.00	2.7322	2.791	2.145	0.126	0.082	0.41391
3670.00	2.7243	2.791	2.141	0.125	0.082	0.41344

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.784	2.142	0.125	0.081	0.41342
3690.00	2.7100	2.779	2.134	0.125	0.081	0.41226
3700.00	2.7027	2.778	2.131	0.125	0.081	0.41178
3710.00	2.6954	2.775	2.129	0.125	0.081	0.41143
3720.00	2.6882	2.771	2.126	0.124	0.081	0.41101
3730.00	2.6810	2.766	2.122	0.124	0.081	0.41023
3740.00	2.6738	2.766	2.118	0.124	0.081	0.40974
3750.00	2.6667	2.760	2.117	0.124	0.080	0.40942
3760.00	2.6596	2.758	2.111	0.124	0.080	0.40861
3770.00	2.6525	2.757	2.109	0.123	0.080	0.40834
3780.00	2.6455	2.753	2.107	0.123	0.080	0.40791
3790.00	2.6385	2.749	2.103	0.123	0.080	0.40726
3800.00	2.6316	2.746	2.100	0.123	0.079	0.40689
3810.00	2.6247	2.741	2.096	0.12	0.079	0.40611
3820.00	2.6178	2.741	2.093	0.12	0.079	0.40571
3830.00	2.6110	2.738	2.088	0.12	0.079	0.40496
3840.00	2.6042	2.738	2.086	0.12	0.079	0.40473
3850.00	2.5974	2.732	2.086	0.122	0.079	0.40454
3860.00	2.5907	2.730	2.081	0.122	0.079	0.40384
3870.00	2.5840	2.727	2.078	0.122	0.078	0.40339
3880.00	2.5773	2.725	2.074	0.121	0.078	0.40274
3890.00	2.5707	2.722	2.073	0.121	0.078	0.40250
3900.00	2.5641	2.719	2.069	0.121	0.078	0.40185
3910.00	2.5575	2.718	2.067	0.121	0.078	0.40157
3920.00	2.5510	2.714	2.066	0.121	0.078	0.40132
3930.00	2.5445	2.709	2.061	0.121	0.077	0.40056
3940.00	2.5381	2.709	2.057	0.120	0.077	0.40004
3950.00	2.5316	2.707	2.054	0.120	0.077	0.39959
3960.00	2.5253	2.705	2.053	0.120	0.077	0.39931
3970.00	2.5189	2.699	2.051	0.120	0.077	0.39886
3980.00	2.5126	2.699	2.045	0.120	0.077	0.39812
3990.00	2.5063	2.696	2.047	0.120	0.077	0.39827
4000.00	2.5000	2.691	2.043	0.120	0.076	0.39754
4016.06	2.4900	2.688	2.037	0.119	0.076	0.39665
4032.26	2.4800	2.685	2.032	0.119	0.076	0.39585
4048.58	2.4700	2.681	2.028	0.119	0.076	0.39523
4065.04	2.4600	2.677	2.023	0.118	0.076	0.39452
4081.63	2.4500	2.674	2.019	0.118	0.076	0.39382
4098.36	2.4400	2.670	2.015	0.118	0.075	0.39319
4115.23	2.4300	2.666	2.012	0.118	0.075	0.39255
4132.23	2.4200	2.662	2.007	0.118	0.075	0.39177
4149.38	2.4100	2.658	2.003	0.117	0.075	0.39112
4166.67	2.4000	2.654	1.999	0.117	0.075	0.39052
4184.10	2.3900	2.650	1.996	0.117	0.074	0.38995
4201.68	2.3800	2.645	1.992	0.117	0.074	0.38921
4219.41	2.3700	2.641	1.987	0.116	0.074	0.38843
4237.29	2.3600	2.637	1.983	0.116	0.074	0.38769
4255.32	2.3500	2.633	1.979	0.116	0.074	0.38703
4273.50	2.3400	2.629	1.975	0.116	0.073	0.38633
4291.85	2.3300	2.625	1.971	0.115	0.073	0.38564

WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.621	1.966	0.115	0.073	0.38489
4329.00	2.3100	2.617	1.962	0.115	0.073	0.38421
4347.83	2.3000	2.613	1.958	0.115	0.072	0.38349
4366.81	2.2900	2.609	1.954	0.114	0.072	0.38279
4385.96	2.2800	2.605	1.950	0.114	0.072	0.38213
4405.29	2.2700	2.601	1.946	0.114	0.072	0.38137
4424.78	2.2600	2.598	1.942	0.114	0.072	0.38070
4444.44	2.2500	2.594	1.939	0.114	0.071	0.38015
4464.29	2.2400	2.589	1.935	0.113	0.071	0.37947
4484.30	2.2300	2.585	1.931	0.113	0.071	0.37888
4504.50	2.2200	2.581	1.928	0.113	0.071	0.37821
4524.89	2.2100	2.576	1.924	0.113	0.071	0.37750
4545.45	2.2000	2.572	1.920	0.112	0.070	0.37678
4566.21	2.1900	2.568	1.916	0.112	0.070	0.37610
4587.16	2.1800	2.564	1.912	0.112	0.070	0.37546
4608.29	2.1700	2.560	1.909	0.112	0.070	0.37488
4629.63	2.1600	2.556	1.906	0.112	0.069	0.37428
4651.16	2.1500	2.551	1.902	0.111	0.069	0.37357
4672.90	2.1400	2.547	1.898	0.111	0.069	0.37293
4694.84	2.1300	2.542	1.895	0.111	0.069	0.37237
4716.98	2.1200	2.537	1.892	0.111	0.068	0.37174
4739.34	2.1100	2.533	1.888	0.110	0.068	0.37107
4761.90	2.1000	2.528	1.886	0.110	0.068	0.37049
4784.69	2.0900	2.523	1.882	0.110	0.068	0.36983
4807.69	2.0800	2.518	1.879	0.110	0.067	0.36919
4830.92	2.0700	2.513	1.875	0.110	0.067	0.36851
4854.37	2.0600	2.508	1.872	0.109	0.067	0.36782
4878.05	2.0500	2.502	1.868	0.109	0.067	0.36720
4901.96	2.0400	2.497	1.865	0.109	0.066	0.36646
4926.11	2.0300	2.492	1.861	0.109	0.066	0.36571
4950.50	2.0200	2.486	1.857	0.108	0.066	0.36496
4975.12	2.0100	2.482	1.852	0.108	0.065	0.36416
5000.00	2.0000	2.477	1.851	0.108	0.065	0.36381
5025.13	1.9900	2.470	1.847	0.108	0.065	0.36308
5050.51	1.9800	2.464	1.843	0.107	0.064	0.36219
5076.14	1.9700	2.459	1.839	0.107	0.064	0.36145
5102.04	1.9600	2.453	1.835	0.107	0.064	0.36070
5128.21	1.9500	2.447	1.831	0.107	0.064	0.35999
5154.64	1.9400	2.441	1.827	0.106	0.063	0.35917
5181.35	1.9300	2.435	1.823	0.106	0.063	0.35828
5208.33	1.9200	2.430	1.818	0.106	0.063	0.35745
5235.60	1.9100	2.424	1.814	0.106	0.062	0.35662
5263.16	1.9000	2.419	1.810	0.105	0.062	0.35582
5291.01	1.8900	2.413	1.806	0.105	0.062	0.35502
5319.15	1.8800	2.407	1.801	0.105	0.061	0.35410
5347.59	1.8700	2.402	1.796	0.104	0.061	0.35320
5376.34	1.8600	2.398	1.793	0.104	0.061	0.35258
5405.41	1.8500	2.392	1.791	0.104	0.061	0.35204
5434.78	1.8400	2.385	1.787	0.104	0.060	0.35127
5464.48	1.8300	2.377	1.783	0.104	0.060	0.35040

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.371	1.777	0.103	0.060	0.34935
5524.86	1.8100	2.366	1.773	0.103	0.059	0.34851
5555.56	1.8000	2.360	1.770	0.103	0.059	0.34781
5586.59	1.7900	2.352	1.766	0.102	0.059	0.34700
5617.98	1.7800	2.345	1.761	0.102	0.058	0.34605
5649.72	1.7700	2.338	1.756	0.102	0.058	0.34510
5681.82	1.7600	2.331	1.751	0.102	0.057	0.34401
5714.29	1.7500	2.325	1.746	0.101	0.057	0.34300
5747.13	1.7400	2.318	1.741	0.101	0.057	0.34197
5780.35	1.7300	2.311	1.735	0.101	0.056	0.34082
5813.95	1.7200	2.305	1.729	0.100	0.056	0.33975
5847.95	1.7100	2.299	1.724	0.100	0.056	0.33871
5882.35	1.7000	2.293	1.719	0.100	0.055	0.33765
5917.16	1.6900	2.286	1.714	0.099	0.055	0.33670
5952.38	1.6800	2.279	1.708	0.099	0.055	0.33558
5988.02	1.6700	2.273	1.703	0.099	0.054	0.33447
6024.10	1.6600	2.266	1.697	0.098	0.054	0.33331
6060.61	1.6500	2.260	1.691	0.098	0.054	0.33215
6097.56	1.6400	2.253	1.685	0.098	0.054	0.33098
6134.97	1.6300	2.248	1.679	0.097	0.053	0.32985
6172.84	1.6200	2.241	1.674	0.097	0.053	0.32882
6211.18	1.6100	2.235	1.669	0.097	0.053	0.32772
6250.00	1.6000	2.228	1.663	0.096	0.052	0.32656
6289.31	1.5900	2.221	1.657	0.096	0.052	0.32525
6329.11	1.5800	2.216	1.650	0.096	0.052	0.32404
6369.43	1.5700	2.209	1.646	0.095	0.051	0.32307
6410.26	1.5600	2.203	1.640	0.095	0.051	0.32186
6451.61	1.5500	2.195	1.634	0.095	0.051	0.32068
6493.51	1.5400	2.189	1.627	0.094	0.050	0.31924
6535.95	1.5300	2.183	1.621	0.094	0.050	0.31805
6578.95	1.5200	2.177	1.616	0.094	0.050	0.31694
6622.52	1.5100	2.170	1.610	0.093	0.050	0.31575
6666.67	1.5000	2.162	1.604	0.093	0.049	0.31441
6711.41	1.4900	2.155	1.596	0.092	0.049	0.31296
6756.76	1.4800	2.149	1.590	0.092	0.049	0.31159
6802.72	1.4700	2.143	1.583	0.092	0.048	0.31025
6849.32	1.4600	2.137	1.576	0.091	0.048	0.30890
6896.55	1.4500	2.131	1.570	0.091	0.048	0.30758
6944.44	1.4400	2.124	1.564	0.091	0.047	0.30625
6993.01	1.4300	2.117	1.557	0.090	0.047	0.30484
7042.25	1.4200	2.112	1.550	0.090	0.047	0.30346
7092.20	1.4100	2.105	1.544	0.089	0.047	0.30214
7142.86	1.4000	2.099	1.537	0.089	0.046	0.30076
7194.24	1.3900	2.093	1.531	0.089	0.046	0.29945
7246.38	1.3800	2.086	1.524	0.088	0.046	0.29800
7299.27	1.3700	2.079	1.517	0.088	0.045	0.29655
7352.94	1.3600	2.073	1.510	0.088	0.045	0.29514
7407.41	1.3500	2.067	1.503	0.087	0.045	0.29367
7462.69	1.3400	2.060	1.497	0.087	0.045	0.29227
7518.80	1.3300	2.053	1.490	0.086	0.044	0.29087



WN	WL	N	K	DN	DK	R
7575.76	1.3200	2.046	1.483	0.086	0.044	0.28925
7633.59	1.3100	2.040	1.475	0.086	0.044	0.28765
7692.31	1.3000	2.033	1.467	0.085	0.044	0.28605
7751.94	1.2900	2.026	1.460	0.085	0.043	0.28438
7812.50	1.2800	2.021	1.452	0.084	0.043	0.28280
7874.02	1.2700	2.015	1.445	0.084	0.043	0.28131
7936.51	1.2600	2.008	1.437	0.084	0.042	0.27968
8000.00	1.2500	2.001	1.430	0.083	0.042	0.27804
8064.52	1.2400	1.995	1.422	0.083	0.042	0.27640
8130.08	1.2300	1.989	1.415	0.082	0.042	0.27477
8196.72	1.2200	1.982	1.406	0.082	0.041	0.27302
8264.46	1.2100	1.977	1.398	0.081	0.041	0.27120
8333.33	1.2000	1.970	1.392	0.081	0.041	0.26989
8403.36	1.1900	1.962	1.383	0.081	0.041	0.26801
8474.58	1.1800	1.957	1.375	0.080	0.040	0.26621
8547.01	1.1700	1.950	1.367	0.080	0.040	0.26441
8620.69	1.1600	1.944	1.358	0.079	0.040	0.26259
8695.65	1.1500	1.938	1.350	0.079	0.040	0.26079
8771.93	1.1400	1.932	1.342	0.078	0.040	0.25903
8849.56	1.1300	1.925	1.333	0.078	0.039	0.25709
8928.57	1.1200	1.920	1.323	0.077	0.039	0.25500
9009.01	1.1100	1.915	1.314	0.077	0.039	0.25311
9090.91	1.1000	1.910	1.306	0.076	0.039	0.25127
9174.31	1.0900	1.905	1.298	0.076	0.039	0.24952
9259.26	1.0800	1.899	1.290	0.075	0.038	0.24780
9345.79	1.0700	1.893	1.281	0.075	0.038	0.24587
9433.96	1.0600	1.888	1.272	0.074	0.038	0.24394
9523.81	1.0500	1.882	1.263	0.074	0.038	0.24206
9615.38	1.0400	1.877	1.255	0.073	0.038	0.24020
9708.74	1.0300	1.872	1.246	0.073	0.038	0.23825
9803.92	1.0200	1.867	1.238	0.073	0.037	0.23640
9900.99	1.0100	1.862	1.229	0.072	0.037	0.23454
10000.00	1.0000	1.857	1.221	0.072	0.037	0.23266
10101.01	0.9900	1.851	1.212	0.071	0.037	0.23077
10204.08	0.9800	1.846	1.204	0.071	0.037	0.22890
10309.28	0.9700	1.841	1.195	0.070	0.037	0.22698
10416.67	0.9600	1.836	1.186	0.070	0.036	0.22500
10526.32	0.9500	1.831	1.177	0.069	0.036	0.22301
10638.30	0.9400	1.826	1.168	0.069	0.036	0.22105
10752.69	0.9300	1.821	1.159	0.068	0.036	0.21903
10869.57	0.9200	1.817	1.150	0.068	0.036	0.21706
10989.01	0.9100	1.813	1.140	0.067	0.036	0.21503
11111.11	0.9000	1.809	1.131	0.067	0.036	0.21314
11235.96	0.8900	1.806	1.124	0.066	0.036	0.21148
11363.64	0.8800	1.801	1.116	0.066	0.035	0.20970
11494.25	0.8700	1.796	1.107	0.065	0.035	0.20771
11627.91	0.8600	1.793	1.098	0.065	0.035	0.20587
11764.71	0.8500	1.789	1.091	0.064	0.035	0.20417
11904.76	0.8400	1.785	1.083	0.064	0.035	0.20257
12048.19	0.8300	1.781	1.076	0.063	0.035	0.20090

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.776	1.068	0.063	0.035	0.19918
12345.68	0.8100	1.773	1.060	0.063	0.035	0.19732
12500.00	0.8000	1.768	1.055	0.062	0.034	0.19625
12658.23	0.7900	1.761	1.048	0.062	0.034	0.19444
12820.51	0.7800	1.755	1.040	0.061	0.034	0.19251
12987.01	0.7700	1.750	1.032	0.061	0.034	0.19061
13157.89	0.7600	1.744	1.023	0.060	0.034	0.18865
13333.33	0.7500	1.739	1.014	0.060	0.033	0.18661
13513.51	0.7400	1.734	1.006	0.059	0.033	0.18474
13698.63	0.7300	1.729	0.997	0.059	0.033	0.18282
13888.89	0.7200	1.724	0.989	0.058	0.033	0.18085
14084.51	0.7100	1.719	0.980	0.058	0.033	0.17890
14285.71	0.7000	1.714	0.972	0.057	0.033	0.17695
14492.75	0.6900	1.709	0.963	0.057	0.032	0.17503
14705.88	0.6800	1.704	0.954	0.056	0.032	0.17301
14925.37	0.6700	1.699	0.945	0.056	0.032	0.17084
15151.52	0.6600	1.696	0.935	0.055	0.032	0.16885
15384.62	0.6500	1.693	0.927	0.055	0.032	0.16708
15625.00	0.6400	1.689	0.920	0.054	0.032	0.16553
15873.02	0.6300	1.685	0.912	0.054	0.032	0.16368
16129.03	0.6200	1.681	0.904	0.054	0.031	0.16193
16393.44	0.6100	1.677	0.897	0.053	0.031	0.16027
16666.67	0.6000	1.673	0.889	0.053	0.031	0.15861
16949.15	0.5900	1.669	0.882	0.052	0.031	0.15696
17241.38	0.5800	1.664	0.875	0.052	0.031	0.15538
17543.86	0.5700	1.659	0.867	0.051	0.031	0.15355
17857.14	0.5600	1.656	0.860	0.051	0.031	0.15186
18181.82	0.5500	1.652	0.853	0.050	0.030	0.15035
18518.52	0.5400	1.647	0.846	0.050	0.030	0.14882
18867.92	0.5300	1.643	0.840	0.050	0.030	0.14735
19230.77	0.5200	1.638	0.834	0.049	0.030	0.14590
19607.84	0.5100	1.634	0.828	0.049	0.030	0.14442
20000.00	0.5000	1.629	0.822	0.049	0.030	0.14302
20408.16	0.4900	1.622	0.817	0.048	0.029	0.14158
20833.33	0.4800	1.616	0.810	0.048	0.029	0.13977
21276.60	0.4700	1.611	0.802	0.047	0.029	0.13792
21739.13	0.4600	1.606	0.795	0.047	0.029	0.13630
22222.22	0.4500	1.602	0.788	0.047	0.028	0.13475
22727.27	0.4400	1.599	0.781	0.046	0.028	0.13332
23255.81	0.4300	1.596	0.776	0.046	0.028	0.13209
23809.52	0.4200	1.593	0.772	0.046	0.028	0.13111
24390.24	0.4100	1.590	0.769	0.046	0.028	0.13047
25000.00	0.4000	1.585	0.768	0.045	0.028	0.12984
25641.03	0.3900	1.579	0.766	0.045	0.028	0.12900
26315.79	0.3800	1.574	0.762	0.045	0.027	0.12805
27027.03	0.3700	1.570	0.759	0.045	0.027	0.12722
27777.78	0.3600	1.569	0.758	0.045	0.027	0.12690
28571.43	0.3500	1.569	0.760	0.045	0.027	0.12736
29411.76	0.3400	1.570	0.771	0.046	0.027	0.12936
30303.03	0.3300	1.562	0.785	0.047	0.027	0.13159

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.554	0.796	0.047	0.026	0.13309
32258.06	0.3100	1.547	0.813	0.048	0.026	0.13621
33333.33	0.3000	1.535	0.840	0.050	0.025	0.14085
34482.76	0.2900	1.516	0.873	0.052	0.023	0.14686
35714.29	0.2800	1.485	0.916	0.055	0.021	0.15509
37037.04	0.2700	1.431	0.969	0.057	0.016	0.16623
38461.54	0.2600	1.336	1.019	0.062	0.020	0.17953
40000.00	0.2500	1.198	1.026	0.065	0.028	0.18797
41666.67	0.2400	1.067	0.969	0.062	0.033	0.18334
43478.26	0.2300	0.973	0.880	0.058	0.035	0.16866
45454.55	0.2200	0.905	0.784	0.053	0.035	0.14931
47619.05	0.2100	0.860	0.689	0.048	0.034	0.12808

### 5.10 Intercalated Graphites

The measured reflectance spectra and computed spectral values of  $n$  and  $k$  for the 13mm dia. pellets of the two intercalated graphites are presented graphically in the following figures:

Dixon 1102	Figs. 89-92, and
Asbury 3222	Figs. 94-97.

Tabulated values of the reflectance and of  $n$  and  $k$  are presented for each of the intercalated graphites immediately after the graphs.

Slight evidence of the intercalates is seen in the reflectance,  $n$ , and  $k$  spectra.

The first derivative of the infrared reflectance spectra of the intercalated graphites are presented in Figs. 93 and 98. The  $1580\text{ cm}^{-1}$  band is present and bands characteristic of the sulfate intercalant in both first derivative spectra. The feature seen at about  $1997\text{ cm}^{-1}$  in the first derivative spectra of the graphites is not present in the first derivative spectra of the intercalated graphites.

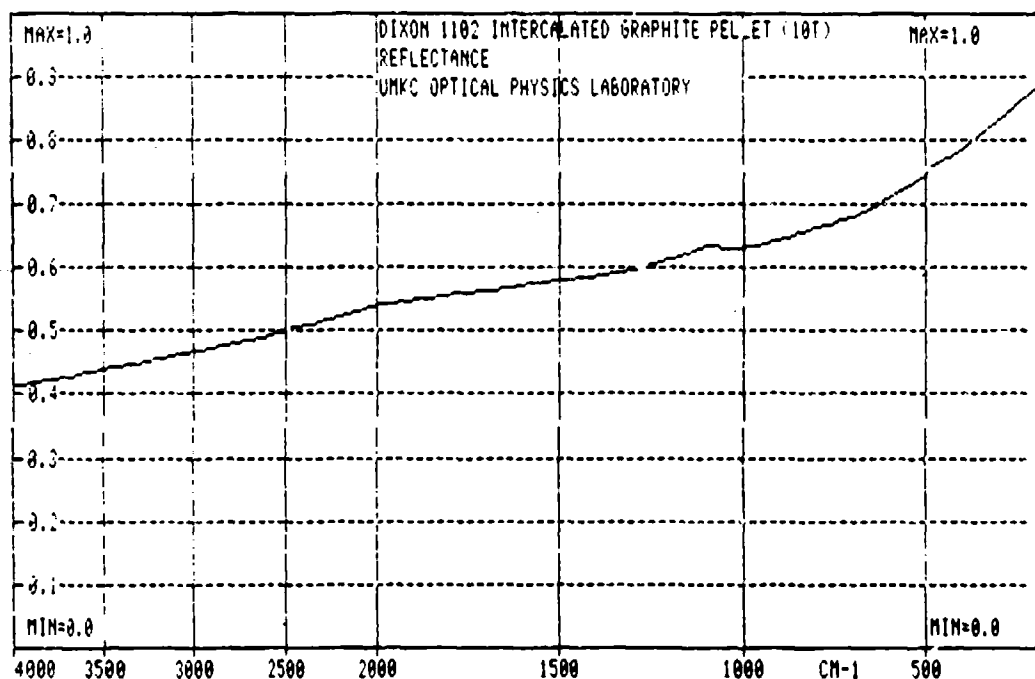


Figure 89. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of the Dixon 1102 intercalated graphite pellet.

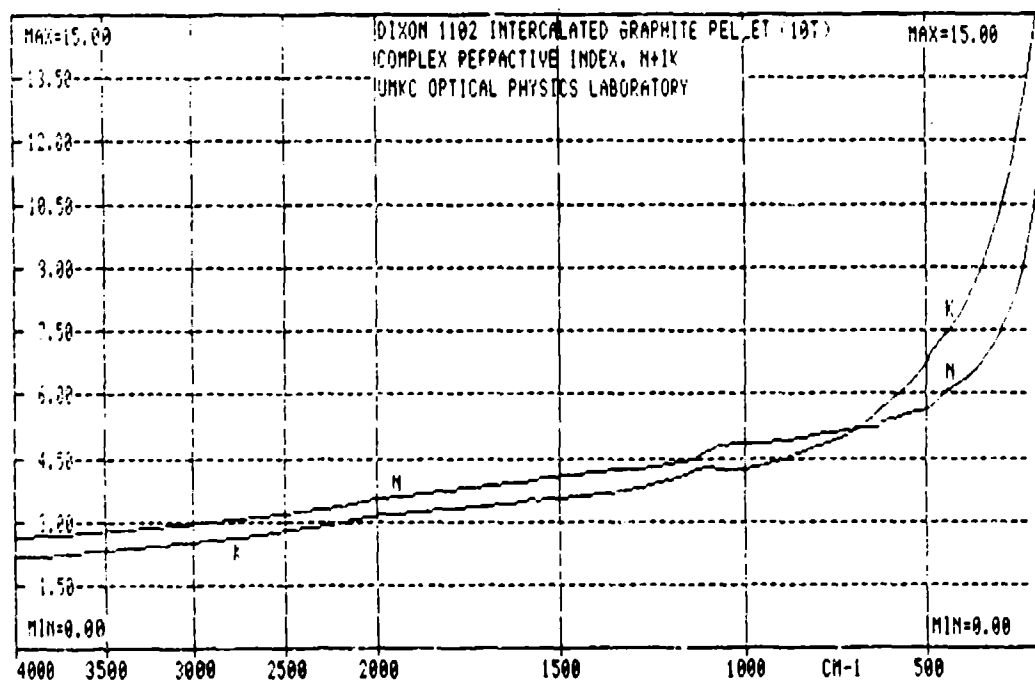


Figure 90. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for the Dixon 1102 intercalated graphite pellet.

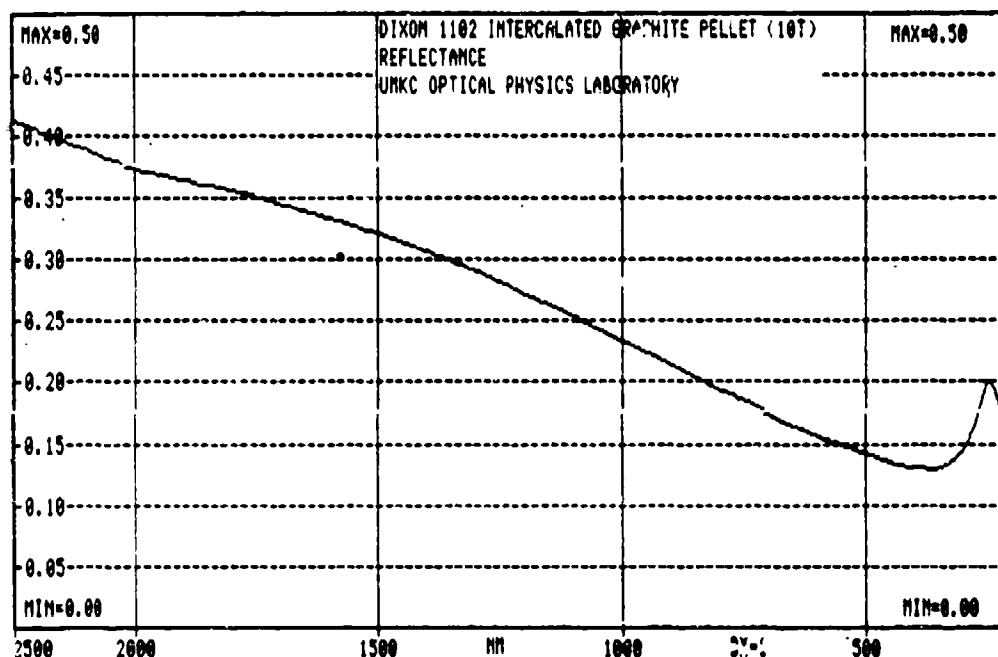


Figure 91. The uv-vis-nir (2,500-200 nm) reflectance spectrum of the Dixon 1102 intercalated graphite pellet.

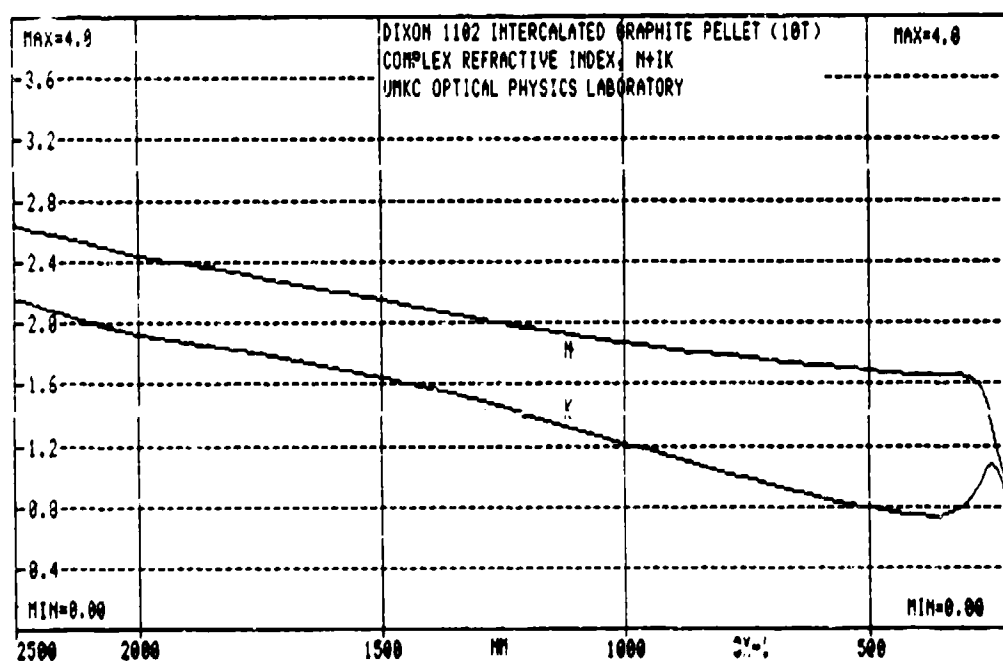


Figure 92. The uv-vis-nir (2,500-210 nm) complex refractive indices n and k for the Dixon 1102 intercalated graphite pellet.

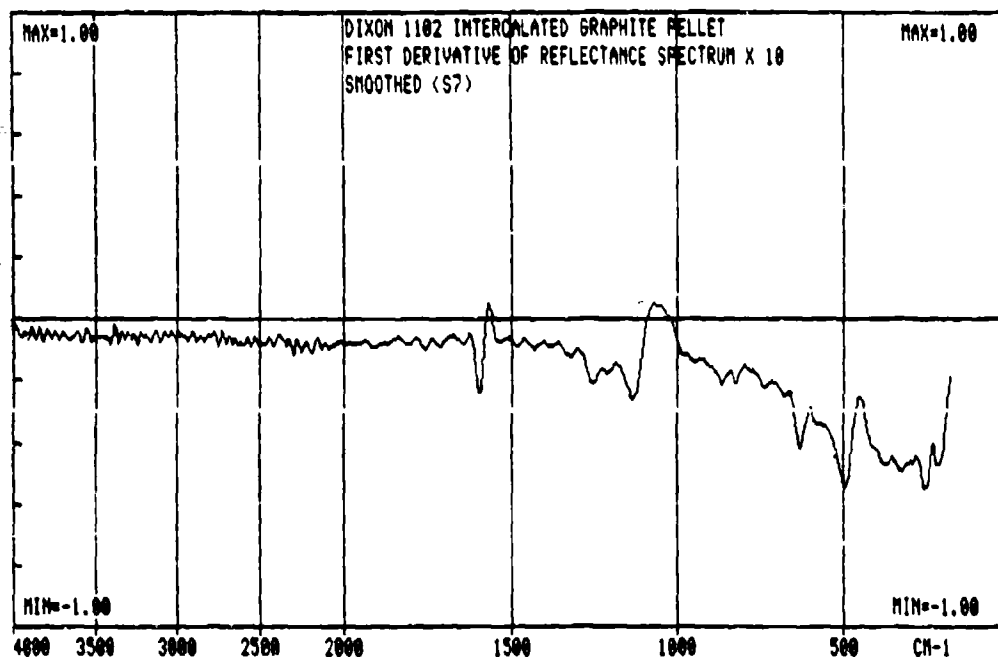


Figure 93. The first derivative of the infrared reflectance spectrum of the Dixon 1102 intercalated graphite pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	13.242	16.188	1.273	2.328	0.88675
190.00	52.6316	12.061	15.672	1.319	2.142	0.88478
200.00	50.0000	11.136	15.051	1.291	1.945	0.88156
210.00	47.6190	10.351	14.402	1.241	1.766	0.87761
220.00	45.4545	9.814	13.750	1.168	1.616	0.87249
230.00	43.4783	9.368	13.234	1.113	1.500	0.86822
240.00	41.6667	8.953	12.758	1.063	1.398	0.86404
250.00	40.0000	8.548	12.301	1.016	1.303	0.85983
260.00	38.4615	8.243	11.782	0.954	1.207	0.85384
270.00	37.0370	8.055	11.369	0.903	1.137	0.84839
280.00	35.7143	7.834	11.029	0.865	1.077	0.84399
290.00	34.4828	7.636	10.702	0.829	1.021	0.83945
300.00	33.3333	7.444	10.388	0.795	0.969	0.83483
310.00	32.2581	7.275	10.094	0.763	0.922	0.83019
320.00	31.2500	7.118	9.817	0.733	0.878	0.82558
330.00	30.3030	6.978	9.547	0.704	0.837	0.82073
340.00	29.4118	6.858	9.289	0.677	0.798	0.81578
350.00	28.5714	6.754	9.058	0.652	0.765	0.81109
360.00	27.7778	6.650	8.848	0.630	0.734	0.80669
370.00	27.0270	6.549	8.637	0.608	0.704	0.80207
380.00	26.3158	6.459	8.437	0.588	0.677	0.79744
390.00	25.6410	6.390	8.247	0.568	0.651	0.79275
400.00	25.0000	6.324	8.074	0.550	0.627	0.78833
410.00	24.3902	6.261	7.914	0.534	0.606	0.78414
420.00	23.8095	6.204	7.767	0.519	0.587	0.78013
430.00	23.2558	6.151	7.626	0.505	0.568	0.77617
440.00	22.7273	6.103	7.510	0.493	0.553	0.77283
450.00	22.2222	6.040	7.414	0.485	0.541	0.77018
460.00	21.7391	5.954	7.316	0.478	0.528	0.76757
470.00	21.2766	5.853	7.207	0.470	0.513	0.76461
480.00	20.8333	5.751	7.074	0.460	0.496	0.76075
490.00	20.4082	5.669	6.919	0.446	0.477	0.75582
500.00	20.0000	5.616	6.760	0.431	0.458	0.75032
510.00	19.6078	5.591	6.620	0.416	0.441	0.74515
520.00	19.2308	5.569	6.499	0.404	0.427	0.74057
530.00	18.8679	5.549	6.390	0.393	0.414	0.73633
540.00	18.5185	5.532	6.292	0.383	0.403	0.73249
550.00	18.1818	5.508	6.203	0.375	0.392	0.72892
560.00	17.8571	5.484	6.116	0.366	0.382	0.72539
570.00	17.5439	5.460	6.035	0.359	0.373	0.72209
580.00	17.2414	5.432	5.954	0.351	0.364	0.71872
590.00	16.9492	5.408	5.878	0.344	0.355	0.71549
600.00	16.6667	5.383	5.806	0.338	0.347	0.71234
610.00	16.3934	5.359	5.735	0.331	0.339	0.70926
620.00	16.1290	5.319	5.670	0.326	0.332	0.70640
630.00	15.8730	5.290	5.581	0.318	0.322	0.70237
640.00	15.6250	5.275	5.495	0.310	0.313	0.69836
650.00	15.3846	5.274	5.420	0.302	0.304	0.69473
660.00	15.1515	5.277	5.368	0.296	0.299	0.69221
670.00	14.9254	5.265	5.315	0.291	0.293	0.68966



WN	WL	N	K	DN	DK	R
680.00	14.7059	5.253	5.263	0.286	0.288	0.68713
690.00	14.4928	5.243	5.215	0.282	0.282	0.68474
700.00	14.2857	5.234	5.167	0.277	0.277	0.68237
710.00	14.0845	5.222	5.127	0.274	0.273	0.68035
720.00	13.8889	5.206	5.086	0.273	0.271	0.67828
730.00	13.6986	5.188	5.047	0.272	0.269	0.67625
740.00	13.5135	5.171	5.003	0.271	0.267	0.67399
750.00	13.3333	5.159	4.961	0.270	0.266	0.67179
760.00	13.1579	5.150	4.925	0.269	0.265	0.66989
770.00	12.9870	5.136	4.893	0.268	0.264	0.66822
780.00	12.8205	5.120	4.859	0.267	0.262	0.66640
790.00	12.6582	5.105	4.829	0.266	0.260	0.66475
800.00	12.5000	5.090	4.800	0.266	0.259	0.66315
810.00	12.3457	5.066	4.773	0.264	0.256	0.66163
820.00	12.1951	5.043	4.737	0.263	0.254	0.65963
830.00	12.0482	5.026	4.702	0.262	0.252	0.65766
840.00	11.9048	5.010	4.668	0.261	0.251	0.65572
850.00	11.7647	4.995	4.640	0.260	0.249	0.65414
860.00	11.6279	4.974	4.606	0.258	0.247	0.65218
870.00	11.4943	4.959	4.569	0.257	0.246	0.65005
880.00	11.3636	4.950	4.534	0.257	0.245	0.64802
890.00	11.2360	4.943	4.505	0.256	0.244	0.64629
900.00	11.1111	4.933	4.478	0.255	0.243	0.64473
910.00	10.9890	4.924	4.452	0.255	0.242	0.64319
920.00	10.8696	4.916	4.428	0.254	0.241	0.64172
930.00	10.7527	4.907	4.406	0.253	0.240	0.64043
940.00	10.6383	4.895	4.385	0.252	0.239	0.63911
950.00	10.5263	4.884	4.362	0.252	0.238	0.63771
960.00	10.4167	4.877	4.338	0.251	0.237	0.63624
970.00	10.3093	4.870	4.318	0.250	0.237	0.63501
980.00	10.2041	4.863	4.293	0.250	0.236	0.63380
990.00	10.1010	4.859	4.278	0.249	0.235	0.63258
1000.00	10.0000	4.859	4.261	0.249	0.235	0.63155
1010.00	9.9010	4.861	4.251	0.249	0.236	0.63096
1020.00	9.8039	4.860	4.249	0.249	0.235	0.63087
1030.00	9.7087	4.856	4.250	0.249	0.235	0.63090
1040.00	9.6154	4.848	4.255	0.248	0.234	0.63116
1050.00	9.5238	4.832	4.262	0.248	0.233	0.63147
1060.00	9.4340	4.816	4.272	0.247	0.231	0.63194
1070.00	9.3458	4.788	4.282	0.246	0.229	0.63242
1080.00	9.2593	4.758	4.290	0.245	0.226	0.63277
1090.00	9.1743	4.717	4.299	0.243	0.222	0.63309
1100.00	9.0909	4.669	4.298	0.241	0.218	0.63288
1110.00	9.0090	4.616	4.286	0.239	0.213	0.63196
1120.00	8.9286	4.564	4.260	0.236	0.208	0.63010
1130.00	8.8496	4.522	4.224	0.234	0.204	0.62765
1140.00	8.7719	4.492	4.185	0.232	0.201	0.62503
1150.00	8.6957	4.471	4.149	0.231	0.200	0.62259
1160.00	8.6207	4.454	4.119	0.230	0.198	0.62050
1170.00	8.5470	4.440	4.092	0.229	0.197	0.61868

WN	WL	N	K	DN	DK	R
1180.00	8.4746	4.426	4.071	0.228	0.196	0.61717
1190.00	8.4034	4.408	4.050	0.227	0.194	0.61571
1200.00	8.3333	4.387	4.029	0.225	0.192	0.61416
1210.00	8.2645	4.368	4.003	0.224	0.191	0.61233
1220.00	8.1967	4.353	3.979	0.223	0.190	0.61057
1230.00	8.1301	4.336	3.957	0.222	0.188	0.60895
1240.00	8.0645	4.320	3.933	0.221	0.187	0.60722
1250.00	8.0000	4.303	3.907	0.220	0.185	0.60523
1260.00	7.9365	4.292	3.877	0.219	0.184	0.60310
1270.00	7.8740	4.287	3.850	0.218	0.184	0.60109
1280.00	7.8125	4.285	3.827	0.218	0.184	0.59946
1290.00	7.7519	4.282	3.811	0.218	0.184	0.59829
1300.00	7.6923	4.276	3.799	0.217	0.183	0.59735
1310.00	7.6336	4.268	3.784	0.217	0.183	0.59618
1320.00	7.5758	4.259	3.769	0.216	0.182	0.59503
1330.00	7.5188	4.250	3.753	0.215	0.181	0.59381
1340.00	7.4627	4.247	3.738	0.215	0.181	0.59269
1350.00	7.4074	4.240	3.725	0.214	0.180	0.59171
1360.00	7.3529	4.234	3.716	0.214	0.180	0.59101
1370.00	7.2993	4.224	3.707	0.213	0.179	0.59026
1380.00	7.2464	4.214	3.694	0.213	0.178	0.58924
1390.00	7.1942	4.206	3.683	0.212	0.178	0.58836
1400.00	7.1429	4.197	3.674	0.212	0.177	0.58759
1410.00	7.0922	4.187	3.665	0.211	0.176	0.58684
1420.00	7.0423	4.175	3.655	0.210	0.175	0.58600
1430.00	6.9930	4.165	3.644	0.210	0.174	0.58506
1440.00	6.9444	4.155	3.631	0.209	0.174	0.58405
1450.00	6.8966	4.148	3.621	0.209	0.173	0.58320
1460.00	6.8493	4.139	3.613	0.208	0.172	0.58255
1470.00	6.8027	4.128	3.606	0.208	0.171	0.58190
1480.00	6.7568	4.116	3.595	0.207	0.170	0.58097
1490.00	6.7114	4.108	3.584	0.206	0.170	0.58004
1500.00	6.6667	4.100	3.576	0.206	0.169	0.57933
1510.00	6.6225	4.091	3.570	0.205	0.168	0.57879
1520.00	6.5789	4.080	3.561	0.205	0.167	0.57802
1530.00	6.5359	4.070	3.554	0.204	0.167	0.57737
1540.00	6.4935	4.060	3.545	0.204	0.166	0.57663
1550.00	6.4516	4.053	3.537	0.203	0.165	0.57591
1560.00	6.4103	4.047	3.534	0.203	0.165	0.57561
1570.00	6.3694	4.040	3.539	0.203	0.164	0.57600
1580.00	6.3291	4.011	3.547	0.202	0.162	0.57644
1590.00	6.2893	3.975	3.532	0.201	0.159	0.57496
1600.00	6.2500	3.956	3.502	0.199	0.157	0.57236
1610.00	6.2112	3.955	3.477	0.199	0.157	0.57031
1620.00	6.1728	3.956	3.470	0.198	0.157	0.56976
1630.00	6.1350	3.946	3.464	0.198	0.157	0.56924
1640.00	6.0976	3.937	3.454	0.197	0.156	0.56834
1650.00	6.0606	3.928	3.446	0.197	0.155	0.56757
1660.00	6.0241	3.920	3.438	0.197	0.155	0.56687
1670.00	5.9880	3.912	3.432	0.196	0.154	0.56633

WN	WL	N	K	DN	DK	R
1680.00	5.9524	3.901	3.425	0.196	0.153	0.56566
1690.00	5.9172	3.890	3.421	0.195	0.152	0.56524
1700.00	5.8824	3.877	3.412	0.194	0.151	0.56437
1710.00	5.8480	3.865	3.405	0.194	0.150	0.56364
1720.00	5.8140	3.853	3.394	0.193	0.149	0.56269
1730.00	5.7803	3.845	3.386	0.193	0.149	0.56193
1740.00	5.7471	3.832	3.380	0.192	0.148	0.56129
1750.00	5.7143	3.821	3.372	0.192	0.147	0.56050
1760.00	5.6818	3.810	3.360	0.191	0.146	0.55946
1770.00	5.6497	3.802	3.351	0.190	0.145	0.55855
1780.00	5.6180	3.793	3.345	0.190	0.145	0.55796
1790.00	5.5866	3.783	3.338	0.190	0.144	0.55733
1800.00	5.5556	3.772	3.330	0.189	0.143	0.55653
1810.00	5.5249	3.762	3.322	0.188	0.142	0.55572
1820.00	5.4945	3.752	3.313	0.188	0.142	0.55493
1830.00	5.4645	3.744	3.306	0.187	0.141	0.55425
1840.00	5.4348	3.734	3.301	0.187	0.140	0.55370
1850.00	5.4054	3.722	3.295	0.187	0.139	0.55306
1860.00	5.3763	3.710	3.287	0.186	0.138	0.55229
1870.00	5.3476	3.699	3.280	0.185	0.138	0.55154
1880.00	5.3191	3.688	3.271	0.185	0.137	0.55072
1890.00	5.2910	3.677	3.263	0.184	0.136	0.54993
1900.00	5.2632	3.666	3.255	0.184	0.135	0.54909
1910.00	5.2356	3.655	3.245	0.183	0.134	0.54815
1920.00	5.2083	3.646	3.235	0.183	0.134	0.54716
1930.00	5.1813	3.638	3.227	0.182	0.133	0.54636
1940.00	5.1546	3.629	3.221	0.182	0.132	0.54575
1950.00	5.1282	3.618	3.213	0.181	0.132	0.54490
1960.00	5.1020	3.608	3.204	0.181	0.131	0.54402
1970.00	5.0761	3.599	3.197	0.180	0.130	0.54324
1980.00	5.0505	3.590	3.189	0.180	0.129	0.54243
1990.00	5.0251	3.580	3.181	0.179	0.129	0.54164
2000.00	5.0000	3.571	3.173	0.179	0.128	0.54082
2010.00	4.9751	3.563	3.165	0.178	0.128	0.54000
2020.00	4.9505	3.553	3.157	0.178	0.127	0.53916
2030.00	4.9261	3.544	3.150	0.177	0.126	0.53845
2040.00	4.9020	3.534	3.143	0.177	0.125	0.53773
2050.00	4.8780	3.524	3.134	0.176	0.125	0.53682
2060.00	4.8544	3.514	3.126	0.176	0.124	0.53595
2070.00	4.8309	3.505	3.119	0.175	0.123	0.53517
2080.00	4.8077	3.495	3.110	0.175	0.123	0.53426
2090.00	4.7847	3.485	3.100	0.174	0.122	0.53319
2100.00	4.7619	3.478	3.091	0.174	0.121	0.53227
2110.00	4.7393	3.470	3.083	0.173	0.121	0.53143
2120.00	4.7170	3.462	3.074	0.173	0.120	0.53057
2130.00	4.6948	3.453	3.065	0.172	0.120	0.52959
2140.00	4.6729	3.447	3.055	0.172	0.119	0.52853
2150.00	4.6512	3.442	3.048	0.171	0.119	0.52782
2160.00	4.6296	3.434	3.042	0.171	0.119	0.52718
2170.00	4.6083	3.425	3.038	0.171	0.118	0.52666

WN	WL	N	K	DN	DK	R
2180.00	4.5872	3.414	3.030	0.170	0.117	0.52579
2190.00	4.5662	3.405	3.021	0.170	0.116	0.52479
2200.00	4.5455	3.396	3.010	0.169	0.116	0.52368
2210.00	4.5249	3.390	3.001	0.169	0.115	0.52269
2220.00	4.5045	3.384	2.992	0.168	0.115	0.52177
2230.00	4.4843	3.378	2.985	0.168	0.115	0.52101
2240.00	4.4643	3.369	2.978	0.167	0.114	0.52022
2250.00	4.4444	3.362	2.969	0.167	0.114	0.51918
2260.00	4.4248	3.355	2.960	0.167	0.113	0.51822
2270.00	4.4053	3.351	2.951	0.166	0.113	0.51724
2280.00	4.3860	3.346	2.944	0.166	0.113	0.51656
2290.00	4.3668	3.339	2.938	0.165	0.112	0.51586
2300.00	4.3478	3.331	2.932	0.165	0.112	0.51516
2310.00	4.3290	3.323	2.922	0.165	0.111	0.51402
2320.00	4.3103	3.319	2.911	0.164	0.111	0.51285
2330.00	4.2918	3.316	2.907	0.164	0.111	0.51242
2340.00	4.2735	3.310	2.900	0.164	0.110	0.51159
2350.00	4.2553	3.304	2.893	0.163	0.110	0.51083
2360.00	4.2373	3.299	2.885	0.163	0.110	0.50993
2370.00	4.2194	3.296	2.879	0.163	0.109	0.50932
2380.00	4.2017	3.289	2.874	0.162	0.109	0.50873
2390.00	4.1841	3.284	2.870	0.162	0.109	0.50818
2400.00	4.1667	3.278	2.866	0.162	0.108	0.50772
2410.00	4.1494	3.269	2.861	0.161	0.108	0.50711
2420.00	4.1322	3.261	2.853	0.161	0.107	0.50618
2430.00	4.1152	3.256	2.844	0.160	0.107	0.50523
2440.00	4.0984	3.252	2.838	0.160	0.107	0.50455
2450.00	4.0816	3.245	2.834	0.160	0.106	0.50403
2460.00	4.0650	3.238	2.829	0.160	0.106	0.50337
2470.00	4.0486	3.230	2.822	0.159	0.105	0.50260
2480.00	4.0323	3.224	2.814	0.159	0.105	0.50168
2490.00	4.0161	3.218	2.808	0.158	0.104	0.50093
2500.00	4.0000	3.212	2.801	0.158	0.104	0.50018
2510.00	3.9841	3.206	2.794	0.158	0.104	0.49934
2520.00	3.9683	3.202	2.786	0.157	0.103	0.49837
2530.00	3.9526	3.198	2.781	0.157	0.103	0.49776
2540.00	3.9370	3.191	2.777	0.157	0.103	0.49729
2550.00	3.9216	3.184	2.769	0.156	0.102	0.49638
2560.00	3.9063	3.178	2.761	0.156	0.102	0.49544
2570.00	3.8911	3.175	2.755	0.156	0.102	0.49467
2580.00	3.8760	3.171	2.751	0.155	0.101	0.49417
2590.00	3.8610	3.163	2.745	0.155	0.101	0.49346
2600.00	3.8462	3.158	2.737	0.155	0.101	0.49257
2610.00	3.8314	3.153	2.731	0.154	0.100	0.49179
2620.00	3.8168	3.148	2.725	0.154	0.100	0.49108
2630.00	3.8023	3.142	2.719	0.154	0.100	0.49034
2640.00	3.7879	3.138	2.711	0.153	0.100	0.48940
2650.00	3.7736	3.135	2.706	0.153	0.099	0.48873
2660.00	3.7594	3.129	2.700	0.153	0.099	0.48810
2670.00	3.7453	3.124	2.694	0.153	0.099	0.48732

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.121	2.687	0.152	0.099	0.48653
2690.00	3.7175	3.117	2.683	0.152	0.098	0.48603
2700.00	3.7037	3.112	2.679	0.152	0.098	0.48548
2710.00	3.6900	3.106	2.672	0.151	0.098	0.48459
2720.00	3.6765	3.104	2.665	0.151	0.098	0.48382
2730.00	3.6630	3.100	2.662	0.151	0.097	0.48336
2740.00	3.6496	3.095	2.658	0.151	0.097	0.48287
2750.00	3.6364	3.088	2.652	0.150	0.097	0.48212
2760.00	3.6232	3.084	2.644	0.150	0.096	0.48112
2770.00	3.6101	3.082	2.639	0.150	0.096	0.48051
2780.00	3.5971	3.080	2.635	0.150	0.096	0.48006
2790.00	3.5842	3.075	2.633	0.149	0.096	0.47971
2800.00	3.5714	3.069	2.627	0.149	0.095	0.47903
2810.00	3.5587	3.065	2.623	0.149	0.095	0.47844
2820.00	3.5461	3.060	2.618	0.149	0.095	0.47784
2830.00	3.5336	3.054	2.614	0.148	0.095	0.47734
2840.00	3.5211	3.049	2.608	0.148	0.094	0.47648
2850.00	3.5088	3.045	2.602	0.148	0.094	0.47580
2860.00	3.4965	3.041	2.598	0.147	0.094	0.47523
2870.00	3.4843	3.037	2.593	0.147	0.094	0.47465
2880.00	3.4722	3.032	2.588	0.147	0.093	0.47399
2890.00	3.4602	3.028	2.582	0.147	0.093	0.47322
2900.00	3.4483	3.024	2.577	0.146	0.093	0.47253
2910.00	3.4364	3.022	2.572	0.146	0.093	0.47199
2920.00	3.4247	3.017	2.571	0.146	0.092	0.47174
2930.00	3.4130	3.011	2.565	0.146	0.092	0.47103
2940.00	3.4014	3.007	2.559	0.145	0.092	0.47026
2950.00	3.3898	3.004	2.554	0.145	0.092	0.46964
2960.00	3.3784	3.002	2.550	0.145	0.091	0.46913
2970.00	3.3670	2.996	2.546	0.145	0.091	0.46858
2980.00	3.3557	2.993	2.542	0.144	0.091	0.46800
2990.00	3.3445	2.990	2.540	0.144	0.091	0.46768
3000.00	3.3333	2.984	2.535	0.144	0.090	0.46699
3010.00	3.3223	2.979	2.531	0.144	0.090	0.46646
3020.00	3.3113	2.976	2.524	0.143	0.090	0.46565
3030.00	3.3003	2.974	2.521	0.143	0.090	0.46527
3040.00	3.2895	2.969	2.518	0.143	0.090	0.46480
3050.00	3.2787	2.965	2.515	0.143	0.089	0.46435
3060.00	3.2680	2.960	2.510	0.143	0.089	0.46372
3070.00	3.2573	2.956	2.507	0.142	0.089	0.46324
3080.00	3.2468	2.952	2.504	0.142	0.088	0.46283
3090.00	3.2362	2.946	2.501	0.142	0.088	0.46243
3100.00	3.2258	2.940	2.495	0.142	0.088	0.46161
3110.00	3.2154	2.936	2.489	0.141	0.088	0.46089
3120.00	3.2051	2.934	2.485	0.141	0.087	0.46027
3130.00	3.1949	2.930	2.483	0.141	0.087	0.45995
3140.00	3.1847	2.925	2.479	0.141	0.087	0.45943
3150.00	3.1746	2.920	2.475	0.140	0.087	0.45888
3160.00	3.1646	2.914	2.470	0.140	0.086	0.45821
3170.00	3.1546	2.910	2.464	0.140	0.086	0.45744

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.907	2.459	0.140	0.086	0.45675
3190.00	3.1348	2.904	2.456	0.139	0.086	0.45633
3200.00	3.1250	2.899	2.453	0.139	0.085	0.45582
3210.00	3.1153	2.895	2.448	0.139	0.085	0.45512
3220.00	3.1056	2.892	2.444	0.139	0.085	0.45464
3230.00	3.0960	2.887	2.442	0.139	0.085	0.45429
3240.00	3.0864	2.881	2.437	0.138	0.084	0.45362
3250.00	3.0769	2.877	2.430	0.138	0.084	0.45269
3260.00	3.0675	2.875	2.425	0.138	0.084	0.45197
3270.00	3.0581	2.872	2.422	0.138	0.084	0.45157
3280.00	3.0488	2.867	2.418	0.137	0.084	0.45105
3290.00	3.0395	2.864	2.414	0.137	0.083	0.45042
3300.00	3.0303	2.861	2.409	0.137	0.083	0.44984
3310.00	3.0211	2.858	2.407	0.137	0.083	0.44952
3320.00	3.0120	2.853	2.403	0.136	0.083	0.44891
3330.00	3.0030	2.849	2.397	0.136	0.083	0.44811
3340.00	2.9940	2.847	2.394	0.136	0.082	0.44765
3350.00	2.9851	2.842	2.393	0.136	0.082	0.44746
3360.00	2.9762	2.836	2.387	0.136	0.082	0.44661
3370.00	2.9674	2.833	2.380	0.135	0.082	0.44567
3380.00	2.9586	2.833	2.377	0.135	0.082	0.44527
3390.00	2.9499	2.830	2.376	0.135	0.081	0.44510
3400.00	2.9412	2.824	2.373	0.135	0.081	0.44469
3410.00	2.9326	2.818	2.369	0.135	0.081	0.44407
3420.00	2.9240	2.815	2.364	0.134	0.081	0.44329
3430.00	2.9155	2.811	2.359	0.134	0.080	0.44267
3440.00	2.9070	2.808	2.355	0.134	0.080	0.44208
3450.00	2.8986	2.804	2.351	0.134	0.080	0.44152
3460.00	2.8902	2.801	2.346	0.133	0.080	0.44084
3470.00	2.8818	2.798	2.343	0.133	0.080	0.44038
3480.00	2.8736	2.794	2.339	0.133	0.079	0.43976
3490.00	2.8653	2.791	2.335	0.133	0.079	0.43926
3500.00	2.8571	2.788	2.331	0.133	0.079	0.43865
3510.00	2.8490	2.784	2.328	0.132	0.079	0.43818
3520.00	2.8409	2.780	2.324	0.132	0.079	0.43756
3530.00	2.8329	2.777	2.319	0.132	0.079	0.43685
3540.00	2.8249	2.774	2.314	0.132	0.078	0.43615
3550.00	2.8167	2.773	2.312	0.132	0.078	0.43585
3560.00	2.8090	2.769	2.309	0.131	0.078	0.43550
3570.00	2.8011	2.764	2.306	0.131	0.078	0.43500
3580.00	2.7933	2.759	2.301	0.131	0.078	0.43419
3590.00	2.7855	2.757	2.295	0.131	0.077	0.43338
3600.00	2.7778	2.756	2.291	0.130	0.077	0.43291
3610.00	2.7701	2.753	2.289	0.130	0.077	0.43253
3620.00	2.7624	2.749	2.287	0.130	0.077	0.43219
3630.00	2.7548	2.745	2.282	0.130	0.077	0.43151
3640.00	2.7473	2.742	2.278	0.130	0.077	0.43093
3650.00	2.7397	2.738	2.274	0.129	0.076	0.43032
3660.00	2.7322	2.735	2.269	0.129	0.076	0.42960
3670.00	2.7248	2.733	2.264	0.129	0.076	0.42890

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.731	2.262	0.129	0.076	0.42856
3690.00	2.7100	2.728	2.259	0.129	0.076	0.42807
3700.00	2.7027	2.724	2.256	0.129	0.076	0.42762
3710.00	2.6954	2.721	2.251	0.128	0.076	0.42691
3720.00	2.6882	2.718	2.246	0.128	0.076	0.42619
3730.00	2.6810	2.717	2.242	0.128	0.076	0.42565
3740.00	2.6738	2.715	2.240	0.128	0.075	0.42535
3750.00	2.6667	2.710	2.237	0.128	0.075	0.42482
3760.00	2.6596	2.708	2.233	0.127	0.075	0.42418
3770.00	2.6525	2.706	2.228	0.127	0.075	0.42356
3780.00	2.6455	2.704	2.226	0.127	0.075	0.42315
3790.00	2.6385	2.702	2.223	0.127	0.075	0.42278
3800.00	2.6316	2.697	2.220	0.127	0.074	0.42228
3810.00	2.6247	2.694	2.215	0.126	0.074	0.42154
3820.00	2.6178	2.693	2.210	0.126	0.074	0.42084
3830.00	2.6110	2.693	2.207	0.126	0.074	0.42036
3840.00	2.6042	2.691	2.206	0.126	0.074	0.42029
3850.00	2.5974	2.686	2.204	0.126	0.074	0.41985
3860.00	2.5907	2.683	2.199	0.126	0.074	0.41915
3870.00	2.5840	2.682	2.195	0.125	0.074	0.41851
3880.00	2.5773	2.681	2.192	0.125	0.074	0.41820
3890.00	2.5707	2.678	2.192	0.125	0.074	0.41812
3900.00	2.5641	2.675	2.189	0.125	0.073	0.41760
3910.00	2.5575	2.670	2.185	0.125	0.073	0.41699
3920.00	2.5510	2.669	2.181	0.125	0.073	0.41638
3930.00	2.5445	2.667	2.179	0.125	0.073	0.41603
3940.00	2.5381	2.663	2.176	0.124	0.073	0.41553
3950.00	2.5316	2.661	2.172	0.124	0.073	0.41502
3960.00	2.5253	2.659	2.168	0.124	0.073	0.41446
3970.00	2.5189	2.658	2.165	0.124	0.073	0.41392
3980.00	2.5126	2.657	2.162	0.124	0.073	0.41357
3990.00	2.5063	2.656	2.161	0.124	0.072	0.41333
4000.00	2.5000	2.653	2.160	0.124	0.072	0.41312
4016.06	2.4900	2.649	2.156	0.123	0.072	0.41260
4032.26	2.4800	2.644	2.154	0.123	0.072	0.41218
4048.58	2.4700	2.638	2.152	0.123	0.071	0.41178
4065.04	2.4600	2.630	2.147	0.123	0.071	0.41089
4081.63	2.4500	2.624	2.140	0.122	0.071	0.40983
4098.36	2.4400	2.620	2.135	0.122	0.070	0.40901
4115.23	2.4300	2.613	2.129	0.122	0.070	0.40814
4132.23	2.4200	2.608	2.120	0.121	0.070	0.40671
4149.38	2.4100	2.610	2.116	0.121	0.070	0.40616
4166.67	2.4000	2.601	2.114	0.121	0.069	0.40573
4184.10	2.3900	2.597	2.104	0.120	0.069	0.40414
4201.68	2.3800	2.594	2.099	0.120	0.069	0.40347
4219.41	2.3700	2.591	2.094	0.120	0.069	0.40268
4237.29	2.3600	2.587	2.089	0.120	0.069	0.40183
4255.32	2.3500	2.583	2.084	0.119	0.069	0.40101
4273.50	2.3400	2.579	2.079	0.119	0.069	0.40028
4291.85	2.3300	2.575	2.074	0.119	0.068	0.39945

WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.571	2.068	0.119	0.068	0.39853
4329.00	2.3100	2.567	2.064	0.118	0.068	0.39778
4347.83	2.3000	2.563	2.058	0.118	0.068	0.39689
4366.81	2.2900	2.559	2.052	0.118	0.068	0.39597
4385.96	2.2800	2.556	2.047	0.117	0.067	0.39513
4405.29	2.2700	2.552	2.043	0.117	0.067	0.39438
4424.78	2.2600	2.549	2.037	0.117	0.067	0.39345
4444.44	2.2500	2.546	2.033	0.117	0.067	0.39281
4464.29	2.2400	2.542	2.029	0.116	0.067	0.39218
4484.30	2.2300	2.537	2.024	0.116	0.067	0.39130
4504.50	2.2200	2.534	2.018	0.116	0.066	0.39042
4524.89	2.2100	2.530	2.014	0.116	0.066	0.38973
4545.45	2.2000	2.525	2.009	0.115	0.066	0.38879
4566.21	2.1900	2.522	2.003	0.115	0.066	0.38791
4587.16	2.1800	2.518	1.999	0.115	0.066	0.38723
4608.29	2.1700	2.515	1.994	0.115	0.066	0.38640
4629.63	2.1600	2.510	1.990	0.114	0.065	0.38565
4651.16	2.1500	2.507	1.984	0.114	0.065	0.38477
4672.90	2.1400	2.503	1.981	0.114	0.065	0.38420
4694.84	2.1300	2.500	1.976	0.114	0.065	0.38332
4716.98	2.1200	2.496	1.972	0.113	0.065	0.38278
4739.34	2.1100	2.491	1.968	0.113	0.064	0.38201
4761.90	2.1000	2.487	1.964	0.113	0.064	0.38127
4784.69	2.0900	2.483	1.960	0.113	0.064	0.38057
4807.69	2.0800	2.479	1.955	0.112	0.064	0.37976
4830.92	2.0700	2.474	1.951	0.112	0.064	0.37913
4854.37	2.0600	2.469	1.947	0.112	0.063	0.37840
4878.05	2.0500	2.464	1.942	0.112	0.063	0.37751
4901.96	2.0400	2.459	1.938	0.111	0.063	0.37669
4926.11	2.0300	2.455	1.933	0.111	0.063	0.37585
4950.50	2.0200	2.450	1.929	0.111	0.062	0.37518
4975.12	2.0100	2.444	1.924	0.111	0.062	0.37428
5000.00	2.0000	2.441	1.918	0.110	0.062	0.37326
5025.13	1.9900	2.438	1.916	0.110	0.062	0.37284
5050.51	1.9800	2.430	1.912	0.110	0.061	0.37204
5076.14	1.9700	2.426	1.906	0.110	0.061	0.37110
5102.04	1.9600	2.421	1.902	0.109	0.061	0.37041
5128.21	1.9500	2.415	1.898	0.109	0.060	0.36955
5154.64	1.9400	2.410	1.892	0.109	0.060	0.36850
5181.35	1.9300	2.406	1.887	0.108	0.060	0.36769
5208.33	1.9200	2.400	1.883	0.108	0.060	0.36693
5235.60	1.9100	2.394	1.877	0.108	0.059	0.36586
5263.16	1.9000	2.391	1.873	0.108	0.059	0.36504
5291.01	1.8900	2.385	1.869	0.107	0.059	0.36433
5319.15	1.8800	2.378	1.863	0.107	0.059	0.36319
5347.59	1.8700	2.375	1.857	0.107	0.059	0.36217
5376.34	1.8600	2.372	1.853	0.107	0.058	0.36156
5405.41	1.8500	2.366	1.851	0.106	0.058	0.36114
5434.78	1.8400	2.359	1.848	0.106	0.058	0.36035
5464.48	1.8300	2.352	1.843	0.106	0.057	0.35940



WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.345	1.836	0.105	0.057	0.35827
5524.86	1.8100	2.340	1.831	0.105	0.057	0.35722
5555.56	1.8000	2.335	1.827	0.105	0.056	0.35652
5586.59	1.7900	2.328	1.823	0.105	0.056	0.35565
5617.98	1.7800	2.321	1.817	0.104	0.056	0.35465
5649.72	1.7700	2.314	1.812	0.104	0.055	0.35356
5681.82	1.7600	2.308	1.806	0.104	0.055	0.35250
5714.29	1.7500	2.301	1.800	0.103	0.055	0.35131
5747.13	1.7400	2.295	1.793	0.103	0.054	0.35010
5780.35	1.7300	2.289	1.787	0.103	0.054	0.34889
5813.95	1.7200	2.283	1.781	0.102	0.054	0.34774
5847.95	1.7100	2.277	1.775	0.102	0.054	0.34660
5882.35	1.7000	2.271	1.768	0.102	0.053	0.34544
5917.16	1.6900	2.266	1.762	0.101	0.053	0.34431
5952.38	1.6800	2.260	1.756	0.101	0.053	0.34316
5988.02	1.6700	2.254	1.751	0.101	0.052	0.34208
6024.10	1.6600	2.248	1.744	0.100	0.052	0.34080
6060.61	1.6500	2.242	1.738	0.100	0.052	0.33959
6097.56	1.6400	2.236	1.731	0.099	0.052	0.33837
6134.97	1.6300	2.230	1.725	0.099	0.051	0.33717
6172.84	1.6200	2.225	1.719	0.099	0.051	0.33598
6211.18	1.6100	2.219	1.713	0.098	0.051	0.33479
6250.00	1.6000	2.213	1.707	0.098	0.051	0.33368
6289.31	1.5900	2.206	1.699	0.098	0.050	0.33222
6329.11	1.5800	2.202	1.692	0.097	0.050	0.33093
6369.43	1.5700	2.196	1.688	0.097	0.050	0.32995
6410.26	1.5600	2.189	1.681	0.097	0.049	0.32872
6451.61	1.5500	2.183	1.675	0.096	0.049	0.32743
6493.51	1.5400	2.176	1.667	0.096	0.049	0.32597
6535.95	1.5300	2.172	1.660	0.096	0.049	0.32463
6578.95	1.5200	2.166	1.656	0.095	0.048	0.32371
6622.52	1.5100	2.160	1.650	0.095	0.048	0.32248
6666.67	1.5000	2.153	1.644	0.095	0.048	0.32125
6711.41	1.4900	2.146	1.637	0.094	0.048	0.31991
6756.76	1.4800	2.139	1.631	0.094	0.047	0.31860
6802.72	1.4700	2.132	1.623	0.093	0.047	0.31705
6849.32	1.4600	2.125	1.616	0.093	0.047	0.31560
6896.55	1.4500	2.118	1.608	0.093	0.046	0.31400
6944.44	1.4400	2.113	1.600	0.092	0.046	0.31245
6993.01	1.4300	2.106	1.592	0.092	0.046	0.31095
7042.25	1.4200	2.101	1.585	0.091	0.046	0.30940
7092.20	1.4100	2.094	1.577	0.091	0.045	0.30796
7142.86	1.4000	2.088	1.570	0.091	0.045	0.30645
7194.24	1.3900	2.082	1.562	0.090	0.045	0.30484
7246.38	1.3800	2.076	1.554	0.090	0.045	0.30330
7299.27	1.3700	2.069	1.547	0.089	0.044	0.30173
7352.94	1.3600	2.064	1.539	0.089	0.044	0.30006
7407.41	1.3500	2.058	1.531	0.088	0.044	0.29846
7462.69	1.3400	2.052	1.523	0.088	0.044	0.29692
7518.80	1.3300	2.046	1.515	0.088	0.043	0.29533

WN	WL	N	K	DN	DK	R
7575.76	1.3200	2.040	1.508	0.087	0.043	0.29375
7633.59	1.3100	2.034	1.500	0.087	0.043	0.29216
7692.31	1.3000	2.027	1.492	0.086	0.043	0.29045
7751.94	1.2900	2.021	1.484	0.086	0.042	0.28876
7812.50	1.2800	2.015	1.475	0.085	0.042	0.28696
7874.02	1.2700	2.008	1.467	0.085	0.042	0.28519
7936.51	1.2600	2.003	1.458	0.084	0.042	0.28342
8000.00	1.2500	1.997	1.450	0.084	0.042	0.28169
8064.52	1.2400	1.991	1.441	0.084	0.041	0.27988
8130.08	1.2300	1.985	1.432	0.083	0.041	0.27803
8196.72	1.2200	1.978	1.423	0.083	0.041	0.27615
8264.46	1.2100	1.972	1.415	0.082	0.041	0.27429
8333.33	1.2000	1.967	1.404	0.082	0.041	0.27208
8403.36	1.1900	1.963	1.396	0.081	0.041	0.27039
8474.58	1.1800	1.957	1.387	0.081	0.040	0.26858
8547.01	1.1700	1.952	1.378	0.080	0.040	0.26669
8620.69	1.1600	1.947	1.369	0.080	0.040	0.26477
8695.65	1.1500	1.941	1.360	0.079	0.040	0.26293
8771.93	1.1400	1.936	1.351	0.079	0.040	0.26101
8849.56	1.1300	1.931	1.342	0.078	0.039	0.25910
8928.57	1.1200	1.925	1.333	0.078	0.039	0.25702
9009.01	1.1100	1.921	1.323	0.077	0.039	0.25503
9090.91	1.1000	1.916	1.314	0.077	0.039	0.25318
9174.31	1.0900	1.911	1.306	0.076	0.039	0.25130
9259.26	1.0800	1.906	1.296	0.076	0.039	0.24930
9345.79	1.0700	1.901	1.287	0.075	0.039	0.24737
9433.96	1.0600	1.896	1.278	0.075	0.039	0.24540
9523.81	1.0500	1.891	1.268	0.074	0.038	0.24335
9615.38	1.0400	1.887	1.259	0.074	0.038	0.24135
9708.74	1.0300	1.883	1.250	0.073	0.038	0.23943
9803.92	1.0200	1.878	1.240	0.073	0.038	0.23740
9900.99	1.0100	1.874	1.232	0.072	0.038	0.23553
10000.00	1.0000	1.870	1.223	0.072	0.038	0.23367
10101.01	0.9900	1.865	1.214	0.071	0.038	0.23168
10204.08	0.9800	1.861	1.204	0.071	0.038	0.22965
10309.28	0.9700	1.857	1.195	0.070	0.037	0.22762
10416.67	0.9600	1.853	1.186	0.070	0.037	0.22587
10526.32	0.9500	1.848	1.178	0.069	0.037	0.22398
10638.30	0.9400	1.843	1.169	0.069	0.037	0.22206
10752.69	0.9300	1.839	1.160	0.068	0.037	0.22004
10869.57	0.9200	1.835	1.151	0.068	0.037	0.21808
10989.01	0.9100	1.830	1.141	0.067	0.037	0.21603
11111.11	0.9000	1.827	1.132	0.067	0.037	0.21411
11235.96	0.8900	1.823	1.124	0.066	0.037	0.21239
11363.64	0.8800	1.818	1.115	0.066	0.036	0.21037
11494.25	0.8700	1.813	1.106	0.065	0.036	0.20838
11627.91	0.8600	1.808	1.096	0.065	0.036	0.20627
11764.71	0.8500	1.803	1.086	0.064	0.036	0.20401
11904.76	0.8400	1.800	1.076	0.064	0.036	0.20190
12048.19	0.8300	1.796	1.066	0.063	0.036	0.19980

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.793	1.056	0.062	0.036	0.19776
12345.68	0.8100	1.789	1.047	0.062	0.036	0.19577
12500.00	0.8000	1.788	1.037	0.061	0.036	0.19370
12658.23	0.7900	1.786	1.030	0.061	0.036	0.19235
12820.51	0.7800	1.782	1.022	0.060	0.035	0.19058
12987.01	0.7700	1.778	1.014	0.060	0.035	0.18873
13157.89	0.7600	1.773	1.005	0.059	0.035	0.18680
13333.33	0.7500	1.770	0.996	0.059	0.035	0.18489
13513.51	0.7400	1.767	0.988	0.058	0.035	0.18317
13698.63	0.7300	1.763	0.979	0.058	0.035	0.18134
13888.89	0.7200	1.759	0.971	0.057	0.035	0.17948
14084.51	0.7100	1.755	0.962	0.057	0.035	0.17762
14285.71	0.7000	1.751	0.953	0.056	0.034	0.17573
14492.75	0.6900	1.747	0.945	0.056	0.034	0.17383
14705.88	0.6800	1.743	0.935	0.055	0.034	0.17185
14925.37	0.6700	1.740	0.926	0.055	0.034	0.16980
15151.52	0.6600	1.737	0.916	0.054	0.034	0.16790
15384.62	0.6500	1.737	0.908	0.054	0.034	0.16641
15625.00	0.6400	1.733	0.903	0.053	0.034	0.16525
15873.02	0.6300	1.726	0.894	0.053	0.034	0.16307
16129.03	0.6200	1.724	0.884	0.052	0.034	0.16119
16393.44	0.6100	1.721	0.876	0.052	0.033	0.15949
16666.67	0.6000	1.718	0.868	0.051	0.033	0.15775
16949.15	0.5900	1.716	0.860	0.051	0.033	0.15612
17241.38	0.5800	1.714	0.852	0.050	0.033	0.15446
17543.86	0.5700	1.712	0.845	0.050	0.033	0.15322
17857.14	0.5600	1.709	0.839	0.049	0.033	0.15190
18181.82	0.5500	1.705	0.832	0.049	0.033	0.15040
18518.52	0.5400	1.702	0.826	0.049	0.033	0.14898
18867.92	0.5300	1.699	0.819	0.048	0.032	0.14756
19230.77	0.5200	1.695	0.813	0.048	0.032	0.14619
19607.84	0.5100	1.692	0.807	0.047	0.032	0.14478
20000.00	0.5000	1.688	0.801	0.047	0.032	0.14346
20408.16	0.4900	1.684	0.795	0.047	0.032	0.14216
20833.33	0.4800	1.679	0.789	0.046	0.032	0.14070
21276.60	0.4700	1.675	0.782	0.046	0.031	0.13915
21739.13	0.4600	1.671	0.775	0.046	0.031	0.13760
22222.22	0.4500	1.668	0.768	0.045	0.031	0.13617
22727.27	0.4400	1.665	0.762	0.045	0.031	0.13484
23255.81	0.4300	1.664	0.756	0.044	0.031	0.13375
23809.52	0.4200	1.662	0.752	0.044	0.031	0.13284
24390.24	0.4100	1.661	0.749	0.044	0.031	0.13224
25000.00	0.4000	1.659	0.747	0.044	0.031	0.13185
25641.03	0.3900	1.656	0.746	0.044	0.031	0.13131
26315.79	0.3800	1.653	0.744	0.044	0.030	0.13070
27027.03	0.3700	1.650	0.742	0.044	0.030	0.13018
27777.78	0.3600	1.650	0.741	0.043	0.030	0.13001
28571.43	0.3500	1.653	0.743	0.044	0.031	0.13051
29411.76	0.3400	1.657	0.752	0.044	0.031	0.13250
30303.03	0.3300	1.655	0.767	0.045	0.031	0.13489

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.651	0.780	0.046	0.031	0.13690
32258.06	0.3100	1.650	0.799	0.047	0.030	0.14026
33333.33	0.3000	1.645	0.829	0.049	0.030	0.14546
34482.76	0.2900	1.633	0.868	0.051	0.029	0.15206
35714.29	0.2800	1.610	0.919	0.055	0.028	0.16091
37037.04	0.2700	1.565	0.984	0.058	0.024	0.17267
38461.54	0.2600	1.477	1.057	0.062	0.017	0.18744
40000.00	0.2500	1.331	1.092	0.067	0.024	0.19872
41666.67	0.2400	1.177	1.052	0.066	0.031	0.19708
43478.26	0.2300	1.060	0.968	0.062	0.034	0.18388
45454.55	0.2200	0.976	0.871	0.057	0.034	0.16511
47619.05	0.2100	0.915	0.766	0.052	0.033	0.14211
50000.00	0.2000	0.855	0.663	0.047	0.033	0.12089

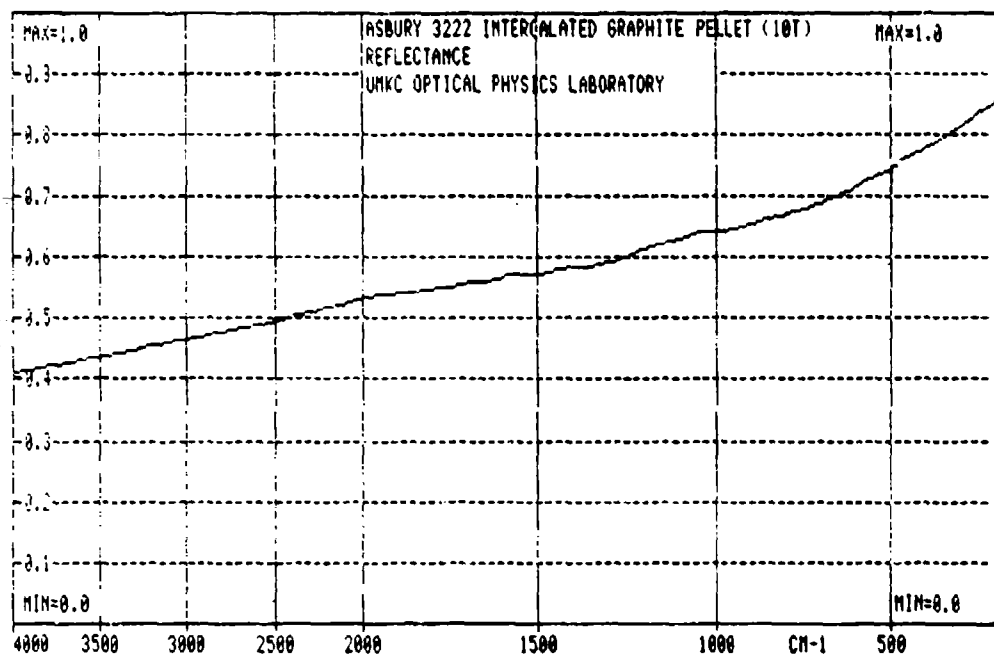


Figure 94. The infrared (4,000-180  $\text{cm}^{-1}$ ) reflectance spectrum of the Asbury 3222 intercalated graphite pellet.

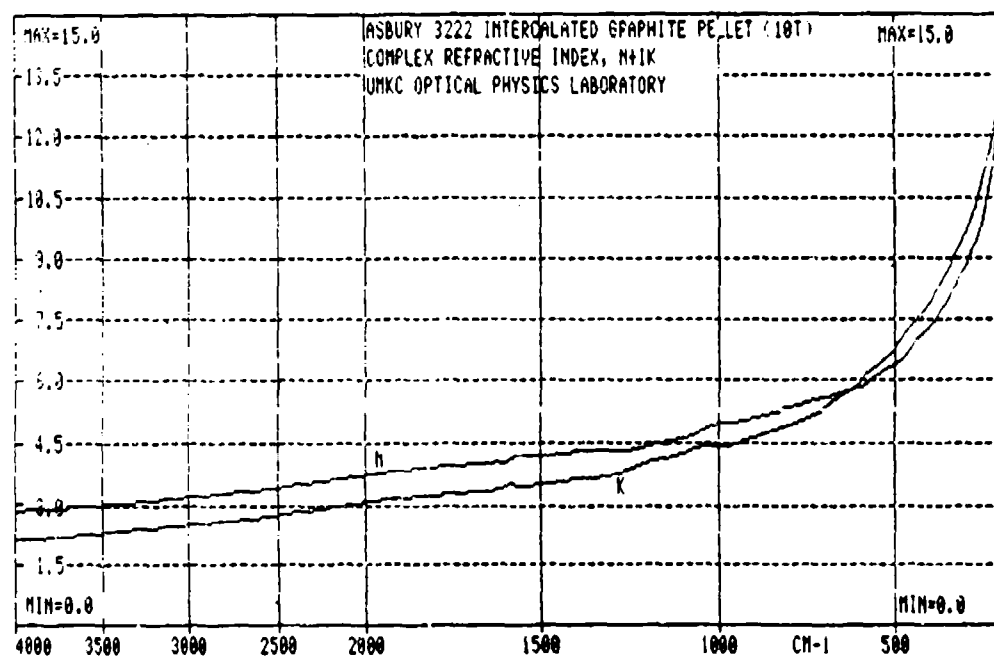


Figure 95. The infrared (4,000-180  $\text{cm}^{-1}$ ) complex refractive indices n and k for the Asbury 3222 intercalated graphite pellet.



Figure 96. The uv-vis-nir (2,500-200 nm) reflectance spectrum of the Asbury 3222 intercalated graphite pellet.

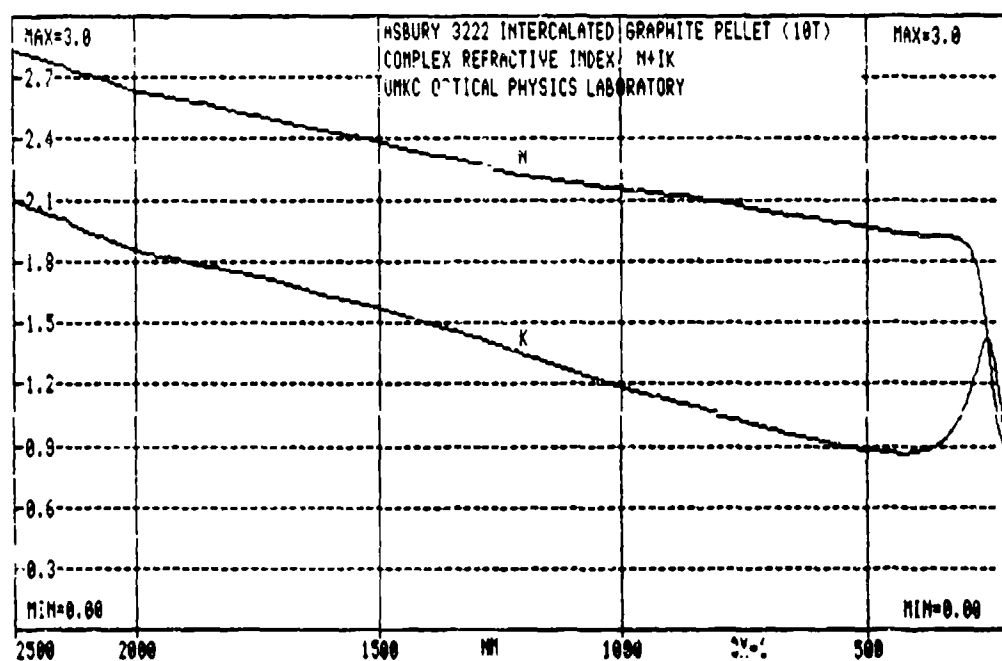


Figure 97. The uv-vis-nir (2,500-210 nm) complex refractive indices n and k for the Asbury 3222 intercalated graphite pellet.

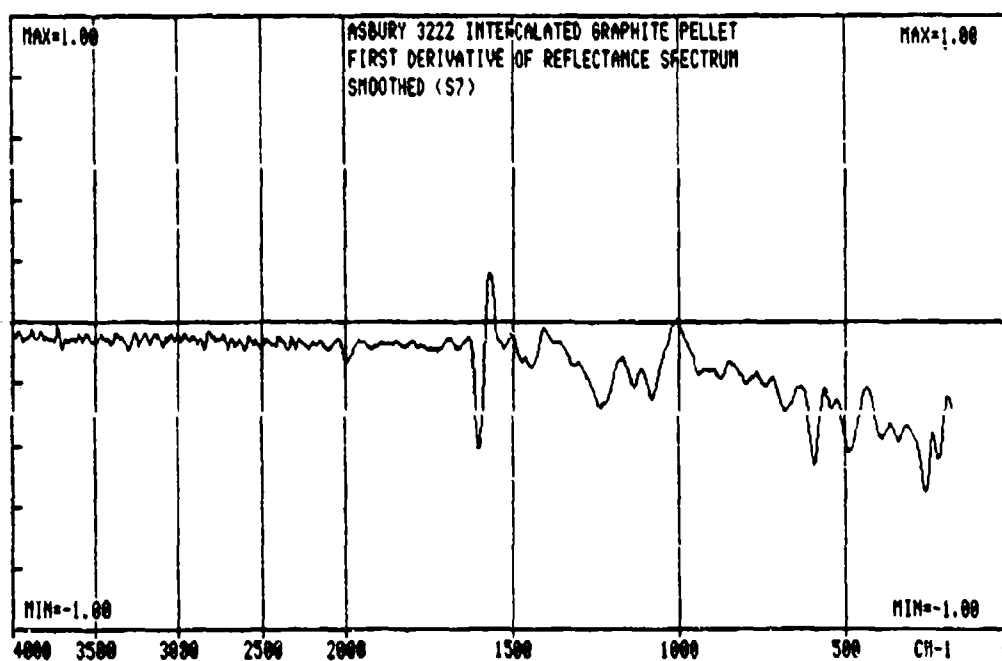


Figure 98. The first derivative of the infrared reflectance spectrum of the Asbury 3222 intercalated graphite pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	14.770	13.212	0.903	2.040	0.86125
190.00	52.6316	13.767	12.971	0.791	1.860	0.85830
200.00	50.0000	12.951	12.751	0.698	1.692	0.85584
210.00	47.6190	12.169	12.505	0.711	1.572	0.85328
220.00	45.4545	11.460	12.115	0.726	1.454	0.84912
230.00	43.4783	10.975	11.680	0.706	1.348	0.84404
240.00	41.6667	10.560	11.415	0.705	1.279	0.84091
250.00	40.0000	10.090	11.118	0.704	1.203	0.83730
260.00	38.4615	9.671	10.730	0.682	1.120	0.83207
270.00	37.0370	9.416	10.344	0.646	1.047	0.82624
280.00	35.7143	9.210	10.068	0.622	0.996	0.82187
290.00	34.4828	9.006	9.822	0.603	0.950	0.81782
300.00	33.3333	8.812	9.603	0.588	0.909	0.81408
310.00	32.2581	8.627	9.405	0.574	0.873	0.81059
320.00	31.2500	8.444	9.229	0.564	0.841	0.80740
330.00	30.3030	8.254	9.045	0.553	0.808	0.80396
340.00	29.4118	8.083	8.856	0.541	0.776	0.80024
350.00	28.5714	7.942	8.669	0.526	0.746	0.79637
360.00	27.7778	7.809	8.512	0.514	0.720	0.79303
370.00	27.0270	7.669	8.363	0.505	0.696	0.78979
380.00	26.3158	7.534	8.212	0.494	0.672	0.78637
390.00	25.6410	7.418	8.049	0.481	0.647	0.78252
400.00	25.0000	7.320	7.904	0.469	0.626	0.77893
410.00	24.3902	7.237	7.776	0.459	0.607	0.77567
420.00	23.8095	7.158	7.667	0.450	0.591	0.77285
430.00	23.2558	7.066	7.572	0.445	0.577	0.77037
440.00	22.7273	6.970	7.491	0.441	0.565	0.76828
450.00	22.2222	6.851	7.403	0.438	0.551	0.76597
460.00	21.7391	6.727	7.299	0.433	0.536	0.76318
470.00	21.2766	6.616	7.176	0.425	0.519	0.75968
480.00	20.8333	6.518	7.048	0.416	0.502	0.75587
490.00	20.4082	6.440	6.915	0.404	0.484	0.75171
500.00	20.0000	6.384	6.792	0.393	0.469	0.74773
510.00	19.6078	6.343	6.685	0.383	0.455	0.74411
520.00	19.2308	6.300	6.603	0.376	0.445	0.74137
530.00	18.8679	6.245	6.526	0.371	0.435	0.73872
540.00	18.5185	6.187	6.451	0.365	0.426	0.73611
550.00	18.1818	6.129	6.368	0.359	0.415	0.73318
560.00	17.8571	6.080	6.296	0.354	0.406	0.73056
570.00	17.5439	6.020	6.239	0.351	0.399	0.72849
580.00	17.2414	5.937	6.166	0.348	0.390	0.72584
590.00	16.9492	5.860	6.061	0.340	0.378	0.72180
600.00	16.6667	5.819	5.946	0.330	0.364	0.71719
610.00	16.3934	5.809	5.848	0.319	0.353	0.71314
620.00	16.1290	5.797	5.786	0.313	0.346	0.71054
630.00	15.8730	5.776	5.727	0.308	0.339	0.70806
640.00	15.6250	5.750	5.679	0.304	0.334	0.70602
650.00	15.3846	5.711	5.629	0.300	0.328	0.70384
660.00	15.1515	5.674	5.574	0.298	0.323	0.70144
670.00	14.9254	5.633	5.514	0.296	0.318	0.69879



WN	WL	N	K	DN	DK	R
680.00	14.7059	5.602	5.452	0.294	0.314	0.69597
690.00	14.4928	5.575	5.391	0.293	0.311	0.69319
700.00	14.2857	5.556	5.330	0.292	0.309	0.69037
710.00	14.0845	5.545	5.284	0.291	0.307	0.68821
720.00	13.8889	5.524	5.244	0.290	0.305	0.68630
730.00	13.6986	5.501	5.205	0.288	0.302	0.68443
740.00	13.5135	5.473	5.166	0.287	0.299	0.68249
750.00	13.3333	5.450	5.121	0.286	0.297	0.68028
760.00	13.1579	5.430	5.084	0.284	0.294	0.67844
770.00	12.9870	5.407	5.049	0.283	0.292	0.67668
780.00	12.8205	5.383	5.015	0.282	0.289	0.67493
790.00	12.6582	5.356	4.979	0.280	0.286	0.67309
800.00	12.5000	5.334	4.941	0.279	0.284	0.67113
810.00	12.3457	5.313	4.904	0.277	0.281	0.66916
820.00	12.1951	5.297	4.869	0.276	0.280	0.66735
830.00	12.0482	5.279	4.841	0.275	0.278	0.66586
840.00	11.9048	5.259	4.813	0.274	0.276	0.66433
850.00	11.7647	5.239	4.790	0.273	0.274	0.66303
860.00	11.6275	5.213	4.766	0.271	0.271	0.66171
870.00	11.4943	5.183	4.739	0.270	0.268	0.66016
880.00	11.3636	5.159	4.703	0.268	0.265	0.65814
890.00	11.2360	5.142	4.672	0.267	0.264	0.65643
900.00	11.1111	5.121	4.646	0.266	0.261	0.65491
910.00	10.9890	5.100	4.618	0.265	0.259	0.65328
920.00	10.8696	5.082	4.590	0.263	0.257	0.65167
930.00	10.7527	5.065	4.565	0.262	0.256	0.65021
940.00	10.6383	5.044	4.535	0.261	0.254	0.64847
950.00	10.5263	5.031	4.506	0.260	0.252	0.64676
960.00	10.4167	5.026	4.481	0.260	0.252	0.64532
970.00	10.3093	5.018	4.465	0.259	0.251	0.64440
980.00	10.2041	5.007	4.451	0.258	0.250	0.64355
990.00	10.1010	4.999	4.441	0.258	0.249	0.64294
1000.00	10.0000	4.986	4.438	0.257	0.248	0.64270
1010.00	9.9010	4.967	4.440	0.256	0.246	0.64272
1020.00	9.8039	4.939	4.445	0.255	0.243	0.64281
1030.00	9.7087	4.901	4.442	0.253	0.240	0.64249
1040.00	9.6154	4.859	4.436	0.251	0.236	0.64196
1050.00	9.5238	4.815	4.420	0.249	0.232	0.64082
1060.00	9.4340	4.773	4.400	0.247	0.228	0.63952
1070.00	9.3458	4.726	4.372	0.245	0.223	0.63764
1080.00	9.2593	4.692	4.336	0.243	0.220	0.63529
1090.00	9.1743	4.664	4.298	0.241	0.217	0.63284
1100.00	9.0909	4.646	4.264	0.240	0.216	0.63066
1110.00	9.0090	4.629	4.241	0.239	0.214	0.62911
1120.00	8.9286	4.604	4.218	0.237	0.212	0.62754
1130.00	8.8496	4.577	4.190	0.236	0.209	0.62564
1140.00	8.7719	4.557	4.158	0.234	0.208	0.62348
1150.00	8.6957	4.545	4.129	0.234	0.207	0.62158
1160.00	8.6207	4.529	4.108	0.233	0.205	0.62013
1170.00	8.5470	4.512	4.091	0.232	0.204	0.61889

WN	WL	N	K	DN	DK	R
1180.00	8.4746	4.491	4.073	0.230	0.202	0.61761
1190.00	8.4034	4.464	4.054	0.229	0.199	0.61619
1200.00	8.3333	4.434	4.030	0.227	0.197	0.61442
1210.00	8.2645	4.407	3.998	0.226	0.194	0.61216
1220.00	8.1967	4.383	3.963	0.224	0.192	0.60959
1230.00	8.1301	4.365	3.925	0.223	0.191	0.60687
1240.00	8.0645	4.353	3.887	0.222	0.190	0.60411
1250.00	8.0000	4.346	3.850	0.221	0.189	0.60145
1260.00	7.9365	4.344	3.819	0.220	0.189	0.59924
1270.00	7.8740	4.342	3.792	0.220	0.189	0.59732
1280.00	7.8125	4.341	3.766	0.219	0.189	0.59546
1290.00	7.7519	4.339	3.745	0.218	0.189	0.59394
1300.00	7.6923	4.339	3.726	0.218	0.189	0.59254
1310.00	7.6336	4.334	3.708	0.217	0.189	0.59122
1320.00	7.5758	4.332	3.688	0.217	0.188	0.58976
1330.00	7.5188	4.330	3.670	0.216	0.188	0.58843
1340.00	7.4627	4.332	3.654	0.216	0.188	0.58732
1350.00	7.4074	4.331	3.643	0.216	0.188	0.58652
1360.00	7.3529	4.329	3.633	0.216	0.188	0.58578
1370.00	7.2993	4.325	3.625	0.215	0.188	0.58515
1380.00	7.2464	4.320	3.617	0.215	0.187	0.58446
1390.00	7.1942	4.314	3.609	0.214	0.187	0.58384
1400.00	7.1429	4.309	3.605	0.214	0.186	0.58349
1410.00	7.0922	4.298	3.604	0.214	0.186	0.58330
1420.00	7.0423	4.279	3.599	0.213	0.184	0.58276
1430.00	6.9930	4.259	3.587	0.212	0.182	0.58164
1440.00	6.9444	4.244	3.568	0.211	0.181	0.58009
1450.00	6.8966	4.234	3.550	0.210	0.180	0.57867
1460.00	6.8493	4.225	3.534	0.209	0.180	0.57734
1470.00	6.8027	4.219	3.519	0.209	0.179	0.57613
1480.00	6.7568	4.212	3.505	0.208	0.178	0.57496
1490.00	6.7114	4.212	3.490	0.208	0.179	0.57386
1500.00	6.6667	4.210	3.484	0.208	0.178	0.57340
1510.00	6.6225	4.203	3.481	0.207	0.178	0.57308
1520.00	6.5789	4.192	3.473	0.207	0.177	0.57234
1530.00	6.5359	4.185	3.461	0.206	0.176	0.57137
1540.00	6.4935	4.181	3.454	0.206	0.176	0.57077
1550.00	6.4516	4.178	3.448	0.206	0.176	0.57027
1560.00	6.4103	4.177	3.445	0.206	0.176	0.57004
1570.00	6.3694	4.182	3.460	0.206	0.176	0.57126
1580.00	6.3291	4.149	3.493	0.206	0.173	0.57338
1590.00	6.2893	4.089	3.490	0.204	0.168	0.57253
1600.00	6.2500	4.042	3.447	0.201	0.165	0.56868
1610.00	6.2112	4.037	3.394	0.199	0.164	0.56439
1620.00	6.1728	4.049	3.374	0.199	0.166	0.56290
1630.00	6.1350	4.050	3.363	0.199	0.166	0.56208
1640.00	6.0976	4.047	3.357	0.199	0.165	0.56152
1650.00	6.0606	4.039	3.348	0.198	0.165	0.56069
1660.00	6.0241	4.031	3.339	0.198	0.164	0.55984
1670.00	5.9880	4.025	3.329	0.197	0.164	0.55896

WN	WL	N	K	DN	DK	R
1680.00	5.9524	4.020	3.320	0.197	0.163	0.55816
1690.00	5.9172	4.012	3.315	0.197	0.163	0.55768
1700.00	5.8824	4.001	3.309	0.196	0.162	0.55704
1710.00	5.8480	3.990	3.300	0.195	0.161	0.55620
1720.00	5.8140	3.979	3.289	0.195	0.160	0.55517
1730.00	5.7803	3.970	3.279	0.194	0.159	0.55424
1740.00	5.7471	3.962	3.270	0.194	0.159	0.55338
1750.00	5.7143	3.952	3.260	0.193	0.158	0.55244
1760.00	5.6818	3.946	3.250	0.193	0.158	0.55151
1770.00	5.6497	3.938	3.243	0.192	0.157	0.55078
1780.00	5.6180	3.930	3.234	0.192	0.156	0.54993
1790.00	5.5866	3.922	3.226	0.191	0.156	0.54917
1800.00	5.5556	3.915	3.218	0.191	0.155	0.54837
1810.00	5.5249	3.906	3.212	0.190	0.155	0.54775
1820.00	5.4945	3.897	3.204	0.190	0.154	0.54697
1830.00	5.4645	3.889	3.195	0.189	0.153	0.54607
1840.00	5.4348	3.882	3.187	0.189	0.153	0.54531
1850.00	5.4054	3.874	3.181	0.188	0.152	0.54467
1860.00	5.3763	3.865	3.174	0.188	0.152	0.54400
1870.00	5.3476	3.856	3.167	0.187	0.151	0.54324
1880.00	5.3191	3.847	3.160	0.187	0.150	0.54250
1890.00	5.2910	3.838	3.153	0.186	0.149	0.54177
1900.00	5.2632	3.829	3.146	0.186	0.149	0.54104
1910.00	5.2356	3.819	3.139	0.185	0.148	0.54033
1920.00	5.2083	3.809	3.130	0.185	0.147	0.53943
1930.00	5.1813	3.801	3.122	0.184	0.147	0.53858
1940.00	5.1546	3.793	3.114	0.184	0.146	0.53775
1950.00	5.1282	3.785	3.107	0.183	0.146	0.53707
1960.00	5.1020	3.777	3.102	0.183	0.145	0.53646
1970.00	5.0761	3.766	3.095	0.183	0.144	0.53574
1980.00	5.0505	3.753	3.089	0.182	0.143	0.53503
1990.00	5.0251	3.741	3.077	0.181	0.142	0.53379
2000.00	5.0000	3.732	3.064	0.181	0.142	0.53246
2010.00	4.9751	3.726	3.051	0.180	0.141	0.53124
2020.00	4.9505	3.724	3.041	0.180	0.141	0.53030
2030.00	4.9261	3.719	3.035	0.179	0.141	0.52961
2040.00	4.9020	3.714	3.029	0.179	0.140	0.52906
2050.00	4.8780	3.707	3.025	0.179	0.140	0.52851
2060.00	4.8544	3.698	3.018	0.178	0.139	0.52778
2070.00	4.8309	3.690	3.012	0.178	0.139	0.52716
2080.00	4.8077	3.682	3.006	0.177	0.138	0.52642
2090.00	4.7847	3.672	2.997	0.177	0.137	0.52547
2100.00	4.7619	3.665	2.989	0.176	0.137	0.52459
2110.00	4.7393	3.658	2.981	0.176	0.136	0.52376
2120.00	4.7170	3.651	2.972	0.175	0.136	0.52282
2130.00	4.6948	3.645	2.964	0.175	0.136	0.52201
2140.00	4.6729	3.640	2.957	0.175	0.135	0.52123
2150.00	4.6512	3.634	2.951	0.174	0.135	0.52059
2160.00	4.6296	3.627	2.945	0.174	0.134	0.51993
2170.00	4.6083	3.619	2.939	0.173	0.134	0.51924

WN	WL	N	K	DN	DK	R
2180.00	4.5872	3.612	2.931	0.173	0.133	0.51838
2190.00	4.5662	3.606	2.925	0.173	0.133	0.51768
2200.00	4.5455	3.599	2.918	0.172	0.132	0.51694
2210.00	4.5249	3.591	2.912	0.172	0.132	0.51626
2220.00	4.5045	3.584	2.904	0.171	0.131	0.51538
2230.00	4.4843	3.577	2.896	0.171	0.131	0.51451
2240.00	4.4643	3.571	2.889	0.171	0.130	0.51373
2250.00	4.4444	3.566	2.882	0.170	0.130	0.51297
2260.00	4.4248	3.560	2.875	0.170	0.130	0.51215
2270.00	4.4053	3.555	2.868	0.169	0.129	0.51146
2280.00	4.3860	3.550	2.863	0.169	0.129	0.51086
2290.00	4.3668	3.544	2.858	0.169	0.129	0.51030
2300.00	4.3478	3.536	2.853	0.168	0.128	0.50967
2310.00	4.3290	3.528	2.844	0.168	0.128	0.50869
2320.00	4.3103	3.525	2.837	0.168	0.127	0.50794
2330.00	4.2918	3.519	2.834	0.167	0.127	0.50758
2340.00	4.2735	3.512	2.829	0.167	0.126	0.50690
2350.00	4.2553	3.502	2.822	0.166	0.126	0.50608
2360.00	4.2373	3.497	2.813	0.166	0.125	0.50507
2370.00	4.2194	3.494	2.807	0.166	0.125	0.50442
2380.00	4.2017	3.488	2.801	0.165	0.125	0.50371
2390.00	4.1841	3.483	2.796	0.165	0.124	0.50316
2400.00	4.1667	3.479	2.790	0.165	0.124	0.50253
2410.00	4.1494	3.472	2.788	0.165	0.124	0.50216
2420.00	4.1322	3.465	2.782	0.164	0.123	0.50150
2430.00	4.1152	3.457	2.776	0.164	0.123	0.50073
2440.00	4.0984	3.452	2.768	0.163	0.122	0.49984
2450.00	4.0816	3.445	2.764	0.163	0.122	0.49929
2460.00	4.0650	3.440	2.756	0.163	0.122	0.49842
2470.00	4.0486	3.435	2.752	0.162	0.121	0.49793
2480.00	4.0323	3.428	2.747	0.162	0.121	0.49727
2490.00	4.0161	3.421	2.742	0.162	0.120	0.49669
2500.00	4.0000	3.414	2.735	0.161	0.120	0.49584
2510.00	3.9841	3.408	2.728	0.161	0.119	0.49499
2520.00	3.9683	3.403	2.720	0.160	0.119	0.49406
2530.00	3.9526	3.400	2.715	0.160	0.119	0.49347
2540.00	3.9370	3.394	2.710	0.160	0.119	0.49283
2550.00	3.9216	3.389	2.704	0.160	0.118	0.49213
2560.00	3.9063	3.384	2.698	0.159	0.118	0.49142
2570.00	3.8911	3.380	2.693	0.159	0.118	0.49086
2580.00	3.8760	3.374	2.689	0.159	0.117	0.49038
2590.00	3.8610	3.366	2.685	0.158	0.117	0.48981
2600.00	3.8462	3.359	2.678	0.158	0.116	0.48897
2610.00	3.8314	3.353	2.670	0.157	0.116	0.48794
2620.00	3.8168	3.351	2.662	0.157	0.116	0.48713
2630.00	3.8023	3.346	2.659	0.157	0.115	0.48668
2640.00	3.7879	3.341	2.653	0.157	0.115	0.48596
2650.00	3.7736	3.335	2.648	0.156	0.115	0.48530
2660.00	3.7594	3.331	2.640	0.156	0.114	0.48441
2670.00	3.7453	3.326	2.635	0.156	0.114	0.48372

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.324	2.629	0.155	0.114	0.48311
2690.00	3.7175	3.319	2.627	0.155	0.114	0.48280
2700.00	3.7037	3.313	2.620	0.155	0.113	0.48194
2710.00	3.6900	3.308	2.614	0.154	0.113	0.48119
2720.00	3.6765	3.306	2.607	0.154	0.113	0.48038
2730.00	3.6630	3.304	2.604	0.154	0.113	0.48002
2740.00	3.6496	3.299	2.600	0.154	0.112	0.47949
2750.00	3.6364	3.294	2.596	0.153	0.112	0.47895
2760.00	3.6232	3.290	2.592	0.153	0.112	0.47848
2770.00	3.6101	3.285	2.588	0.153	0.112	0.47794
2780.00	3.5971	3.281	2.582	0.153	0.111	0.47721
2790.00	3.5842	3.277	2.579	0.152	0.111	0.47679
2800.00	3.5714	3.273	2.574	0.152	0.111	0.47621
2810.00	3.5587	3.268	2.570	0.152	0.111	0.47569
2820.00	3.5461	3.265	2.567	0.152	0.110	0.47528
2830.00	3.5336	3.260	2.566	0.152	0.110	0.47507
2840.00	3.5211	3.251	2.562	0.151	0.109	0.47438
2850.00	3.5088	3.244	2.555	0.151	0.109	0.47351
2860.00	3.4965	3.240	2.548	0.150	0.109	0.47264
2870.00	3.4843	3.237	2.544	0.150	0.109	0.47218
2880.00	3.4722	3.231	2.540	0.150	0.108	0.47157
2890.00	3.4602	3.228	2.533	0.150	0.108	0.47081
2900.00	3.4483	3.223	2.529	0.149	0.108	0.47023
2910.00	3.4364	3.222	2.524	0.149	0.108	0.46966
2920.00	3.4247	3.216	2.522	0.149	0.107	0.46927
2930.00	3.4130	3.212	2.517	0.149	0.107	0.46863
2940.00	3.4014	3.206	2.512	0.148	0.107	0.46805
2950.00	3.3898	3.204	2.507	0.148	0.107	0.46738
2960.00	3.3784	3.201	2.504	0.148	0.106	0.46703
2970.00	3.3670	3.195	2.501	0.148	0.106	0.46657
2980.00	3.3557	3.191	2.497	0.147	0.106	0.46597
2990.00	3.3445	3.187	2.492	0.147	0.105	0.46536
3000.00	3.3333	3.184	2.489	0.147	0.105	0.46496
3010.00	3.3223	3.178	2.488	0.147	0.105	0.46472
3020.00	3.3113	3.172	2.482	0.146	0.105	0.46396
3030.00	3.3003	3.169	2.478	0.146	0.104	0.46337
3040.00	3.2895	3.165	2.473	0.146	0.104	0.46278
3050.00	3.2787	3.160	2.473	0.146	0.104	0.46264
3060.00	3.2680	3.154	2.467	0.145	0.103	0.46183
3070.00	3.2573	3.150	2.463	0.145	0.103	0.46133
3080.00	3.2468	3.144	2.460	0.145	0.103	0.46086
3090.00	3.2362	3.138	2.456	0.145	0.102	0.46024
3100.00	3.2258	3.132	2.448	0.144	0.102	0.45917
3110.00	3.2154	3.131	2.443	0.144	0.102	0.45866
3120.00	3.2051	3.127	2.441	0.144	0.102	0.45824
3130.00	3.1949	3.123	2.436	0.144	0.101	0.45767
3140.00	3.1847	3.119	2.433	0.143	0.101	0.45718
3150.00	3.1746	3.116	2.430	0.143	0.101	0.45678
3160.00	3.1646	3.110	2.427	0.143	0.101	0.45634
3170.00	3.1546	3.104	2.423	0.143	0.100	0.45568

WN	WL	N	K	DN	DK	R
3180.00	3.1447	3.100	2.418	0.142	0.100	0.45499
3190.00	3.1348	3.097	2.413	0.142	0.100	0.45437
3200.00	3.1250	3.093	2.410	0.142	0.100	0.45394
3210.00	3.1153	3.089	2.407	0.142	0.099	0.45350
3220.00	3.1056	3.083	2.404	0.142	0.099	0.45304
3230.00	3.0960	3.077	2.400	0.141	0.099	0.45245
3240.00	3.0864	3.071	2.395	0.141	0.098	0.45172
3250.00	3.0769	3.067	2.389	0.141	0.098	0.45094
3260.00	3.0675	3.064	2.384	0.140	0.098	0.45028
3270.00	3.0581	3.061	2.380	0.140	0.098	0.44974
3280.00	3.0488	3.056	2.378	0.140	0.097	0.44944
3290.00	3.0395	3.051	2.375	0.140	0.097	0.44891
3300.00	3.0303	3.043	2.370	0.139	0.097	0.44809
3310.00	3.0211	3.039	2.363	0.139	0.096	0.44721
3320.00	3.0120	3.035	2.357	0.139	0.096	0.44644
3330.00	3.0030	3.033	2.350	0.138	0.096	0.44557
3340.00	2.9940	3.030	2.346	0.138	0.096	0.44496
3350.00	2.9851	3.028	2.342	0.138	0.096	0.44443
3360.00	2.9762	3.024	2.338	0.138	0.096	0.44393
3370.00	2.9674	3.021	2.333	0.137	0.095	0.44323
3380.00	2.9586	3.020	2.331	0.137	0.095	0.44296
3390.00	2.9499	3.015	2.328	0.137	0.095	0.44251
3400.00	2.9412	3.010	2.325	0.137	0.095	0.44196
3410.00	2.9326	3.005	2.320	0.137	0.094	0.44128
3420.00	2.9240	3.002	2.314	0.136	0.094	0.44053
3430.00	2.9155	3.000	2.311	0.136	0.094	0.44003
3440.00	2.9070	2.996	2.308	0.136	0.094	0.43954
3450.00	2.8986	2.992	2.303	0.136	0.094	0.43888
3460.00	2.8902	2.989	2.299	0.135	0.094	0.43833
3470.00	2.8818	2.986	2.296	0.135	0.093	0.43786
3480.00	2.8736	2.982	2.293	0.135	0.093	0.43739
3490.00	2.8653	2.977	2.288	0.135	0.093	0.43674
3500.00	2.8571	2.974	2.283	0.135	0.093	0.43597
3510.00	2.8490	2.970	2.279	0.134	0.092	0.43539
3520.00	2.8409	2.967	2.274	0.134	0.092	0.43477
3530.00	2.8329	2.964	2.269	0.134	0.092	0.43407
3540.00	2.8249	2.962	2.265	0.134	0.092	0.43346
3550.00	2.8169	2.961	2.263	0.133	0.092	0.43320
3560.00	2.8090	2.956	2.260	0.133	0.092	0.43274
3570.00	2.8011	2.952	2.256	0.133	0.091	0.43211
3580.00	2.7933	2.949	2.251	0.133	0.091	0.43142
3590.00	2.7855	2.947	2.248	0.133	0.091	0.43097
3600.00	2.7778	2.944	2.245	0.132	0.091	0.43063
3610.00	2.7701	2.939	2.241	0.132	0.091	0.42999
3620.00	2.7624	2.935	2.237	0.132	0.090	0.42943
3630.00	2.7548	2.933	2.233	0.132	0.090	0.42883
3640.00	2.7473	2.930	2.229	0.132	0.090	0.42828
3650.00	2.7397	2.926	2.226	0.131	0.090	0.42780
3660.00	2.7322	2.922	2.221	0.131	0.090	0.42709
3670.00	2.7248	2.918	2.217	0.131	0.090	0.42639

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.916	2.213	0.131	0.089	0.42593
3690.00	2.7100	2.912	2.210	0.130	0.089	0.42535
3700.00	2.7027	2.908	2.204	0.130	0.089	0.42448
3710.00	2.6954	2.906	2.197	0.130	0.089	0.42359
3720.00	2.6882	2.908	2.192	0.130	0.089	0.42301
3730.00	2.6810	2.907	2.192	0.130	0.089	0.42295
3740.00	2.6738	2.904	2.190	0.129	0.089	0.42267
3750.00	2.6667	2.898	2.187	0.129	0.088	0.42217
3760.00	2.6596	2.896	2.182	0.129	0.088	0.42139
3770.00	2.6525	2.894	2.179	0.129	0.088	0.42102
3780.00	2.6455	2.890	2.175	0.129	0.088	0.42039
3790.00	2.6385	2.888	2.171	0.128	0.088	0.41979
3800.00	2.6316	2.886	2.168	0.128	0.088	0.41941
3810.00	2.6247	2.883	2.164	0.128	0.088	0.41876
3820.00	2.6178	2.881	2.160	0.128	0.088	0.41823
3830.00	2.6110	2.880	2.156	0.128	0.088	0.41776
3840.00	2.6042	2.878	2.155	0.128	0.087	0.41756
3850.00	2.5974	2.874	2.153	0.127	0.087	0.41709
3860.00	2.5907	2.871	2.150	0.127	0.087	0.41663
3870.00	2.5840	2.868	2.145	0.127	0.087	0.41590
3880.00	2.5773	2.867	2.141	0.127	0.087	0.41544
3890.00	2.5707	2.865	2.139	0.127	0.087	0.41514
3900.00	2.5641	2.862	2.137	0.126	0.087	0.41483
3910.00	2.5575	2.857	2.134	0.126	0.086	0.41425
3920.00	2.5510	2.856	2.130	0.126	0.086	0.41374
3930.00	2.5445	2.852	2.128	0.126	0.086	0.41328
3940.00	2.5381	2.849	2.123	0.126	0.086	0.41261
3950.00	2.5316	2.847	2.119	0.125	0.086	0.41195
3960.00	2.5253	2.846	2.116	0.125	0.086	0.41154
3970.00	2.5189	2.845	2.113	0.125	0.086	0.41114
3980.00	2.5126	2.842	2.111	0.125	0.085	0.41084
3990.00	2.5063	2.838	2.108	0.125	0.085	0.41034
4000.00	2.5000	2.837	2.104	0.125	0.085	0.40975
4016.06	2.4900	2.833	2.101	0.124	0.085	0.40924
4032.26	2.4800	2.828	2.096	0.124	0.085	0.40851
4048.58	2.4700	2.823	2.091	0.124	0.084	0.40770
4065.04	2.4600	2.818	2.085	0.124	0.084	0.40680
4081.63	2.4500	2.814	2.079	0.123	0.084	0.40586
4098.36	2.4400	2.811	2.073	0.123	0.084	0.40500
4115.23	2.4300	2.808	2.068	0.123	0.084	0.40424
4132.23	2.4200	2.805	2.063	0.122	0.084	0.40346
4149.38	2.4100	2.802	2.058	0.122	0.083	0.40273
4166.67	2.4000	2.798	2.054	0.122	0.083	0.40207
4184.10	2.3900	2.794	2.049	0.122	0.083	0.40137
4201.68	2.3800	2.790	2.045	0.121	0.083	0.40069
4219.41	2.3700	2.785	2.040	0.121	0.082	0.39986
4237.29	2.3600	2.782	2.035	0.121	0.082	0.39901
4255.32	2.3500	2.778	2.030	0.120	0.082	0.39829
4273.50	2.3400	2.774	2.025	0.120	0.082	0.39747
4291.85	2.3300	2.770	2.019	0.120	0.082	0.39659

WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.768	2.014	0.120	0.082	0.39582
4329.00	2.3100	2.766	2.011	0.119	0.082	0.39542
4347.83	2.3000	2.761	2.012	0.119	0.081	0.39531
4366.81	2.2900	2.751	2.008	0.119	0.081	0.39449
4385.96	2.2800	2.744	2.000	0.119	0.080	0.39326
4405.29	2.2700	2.738	1.992	0.118	0.080	0.39194
4424.78	2.2600	2.735	1.984	0.118	0.080	0.39075
4444.44	2.2500	2.732	1.977	0.117	0.080	0.38975
4464.29	2.2400	2.730	1.971	0.117	0.080	0.38882
4484.30	2.2300	2.727	1.966	0.117	0.079	0.38804
4504.50	2.2200	2.724	1.961	0.116	0.079	0.38724
4524.89	2.2100	2.720	1.955	0.116	0.079	0.38637
4545.45	2.2000	2.717	1.950	0.116	0.079	0.38555
4566.21	2.1900	2.714	1.945	0.116	0.079	0.38476
4587.16	2.1800	2.712	1.940	0.115	0.079	0.38406
4608.29	2.1700	2.708	1.937	0.115	0.079	0.38341
4629.63	2.1600	2.704	1.932	0.115	0.078	0.38265
4651.16	2.1500	2.700	1.927	0.115	0.078	0.38184
4672.90	2.1400	2.697	1.923	0.114	0.078	0.38111
4694.84	2.1300	2.693	1.918	0.114	0.078	0.38039
4716.98	2.1200	2.689	1.914	0.114	0.078	0.37965
4739.34	2.1100	2.685	1.910	0.114	0.077	0.37892
4761.90	2.1000	2.681	1.905	0.113	0.077	0.37819
4784.69	2.0900	2.676	1.901	0.113	0.077	0.37744
4807.69	2.0800	2.671	1.896	0.113	0.077	0.37661
4830.92	2.0700	2.667	1.891	0.112	0.076	0.37576
4854.37	2.0600	2.663	1.886	0.112	0.076	0.37493
4878.05	2.0500	2.659	1.882	0.112	0.076	0.37412
4901.96	2.0400	2.654	1.877	0.112	0.076	0.37336
4926.11	2.0300	2.650	1.873	0.111	0.075	0.37264
4950.50	2.0200	2.645	1.869	0.111	0.075	0.37187
4975.12	2.0100	2.638	1.865	0.111	0.075	0.37105
5000.00	2.0000	2.631	1.857	0.110	0.074	0.36964
5025.13	1.9900	2.629	1.849	0.110	0.074	0.36849
5050.51	1.9800	2.626	1.845	0.110	0.074	0.36775
5076.14	1.9700	2.622	1.840	0.109	0.074	0.36690
5102.04	1.9600	2.618	1.836	0.109	0.074	0.36616
5128.21	1.9500	2.613	1.831	0.109	0.074	0.36538
5154.64	1.9400	2.608	1.827	0.109	0.073	0.36454
5181.35	1.9300	2.603	1.822	0.108	0.073	0.36364
5208.33	1.9200	2.598	1.816	0.108	0.073	0.36263
5235.60	1.9100	2.593	1.810	0.108	0.073	0.36160
5263.16	1.9000	2.589	1.805	0.107	0.072	0.36069
5291.01	1.8900	2.585	1.799	0.107	0.072	0.35975
5319.15	1.8800	2.580	1.794	0.107	0.072	0.35875
5347.59	1.8700	2.577	1.787	0.106	0.072	0.35771
5376.34	1.8600	2.576	1.784	0.106	0.072	0.35714
5405.41	1.8500	2.571	1.782	0.106	0.072	0.35677
5434.78	1.8400	2.564	1.778	0.106	0.071	0.35590
5464.48	1.8300	2.557	1.773	0.105	0.071	0.35491



WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.552	1.767	0.105	0.071	0.35385
5524.86	1.8100	2.548	1.762	0.105	0.070	0.35294
5555.56	1.8000	2.542	1.758	0.105	0.070	0.35218
5586.59	1.7900	2.535	1.753	0.104	0.070	0.35120
5617.98	1.7800	2.529	1.748	0.104	0.069	0.35012
5649.72	1.7700	2.523	1.742	0.104	0.069	0.34901
5681.82	1.7600	2.517	1.736	0.103	0.069	0.34791
5714.29	1.7500	2.512	1.730	0.103	0.068	0.34684
5747.13	1.7400	2.505	1.724	0.102	0.068	0.34568
5780.35	1.7300	2.500	1.718	0.102	0.068	0.34450
5813.95	1.7200	2.494	1.711	0.102	0.068	0.34326
5847.95	1.7100	2.488	1.704	0.101	0.067	0.34200
5882.35	1.7000	2.484	1.697	0.101	0.067	0.34082
5917.16	1.6900	2.478	1.691	0.101	0.067	0.33966
5952.38	1.6800	2.473	1.684	0.100	0.067	0.33837
5988.02	1.6700	2.468	1.677	0.100	0.066	0.33716
6024.10	1.6600	2.464	1.670	0.099	0.066	0.33594
6060.61	1.6500	2.459	1.664	0.099	0.066	0.33478
6097.56	1.6400	2.455	1.658	0.099	0.066	0.33363
6134.97	1.6300	2.450	1.651	0.098	0.066	0.33248
6172.84	1.6200	2.445	1.645	0.098	0.065	0.33131
6211.18	1.6100	2.441	1.638	0.097	0.065	0.33013
6250.00	1.6000	2.436	1.632	0.097	0.065	0.32902
6289.31	1.5900	2.431	1.626	0.097	0.065	0.32781
6329.11	1.5800	2.428	1.619	0.096	0.065	0.32670
6369.43	1.5700	2.423	1.614	0.096	0.064	0.32575
6410.26	1.5600	2.419	1.609	0.096	0.064	0.32475
6451.61	1.5500	2.413	1.604	0.095	0.064	0.32368
6493.51	1.5400	2.407	1.597	0.095	0.064	0.32235
6535.95	1.5300	2.403	1.591	0.095	0.063	0.32115
6578.95	1.5200	2.397	1.586	0.094	0.063	0.32017
6622.52	1.5100	2.392	1.580	0.094	0.063	0.31901
6666.67	1.5000	2.386	1.574	0.094	0.063	0.31779
6711.41	1.4900	2.380	1.568	0.093	0.062	0.31658
6756.76	1.4800	2.374	1.561	0.093	0.062	0.31536
6802.72	1.4700	2.368	1.555	0.093	0.062	0.31407
6849.32	1.4600	2.362	1.548	0.092	0.061	0.31262
6896.55	1.4500	2.356	1.541	0.092	0.061	0.31129
6944.44	1.4400	2.350	1.534	0.091	0.061	0.30990
6993.01	1.4300	2.344	1.526	0.091	0.061	0.30846
7042.25	1.4200	2.339	1.519	0.090	0.060	0.30707
7092.20	1.4100	2.333	1.512	0.090	0.060	0.30565
7142.86	1.4000	2.328	1.504	0.090	0.060	0.30420
7194.24	1.3900	2.322	1.496	0.089	0.060	0.30265
7246.38	1.3800	2.317	1.488	0.089	0.059	0.30114
7299.27	1.3700	2.312	1.480	0.088	0.059	0.29965
7352.94	1.3600	2.307	1.473	0.088	0.059	0.29822
7407.41	1.3500	2.303	1.466	0.087	0.059	0.29688
7462.69	1.3400	2.297	1.458	0.087	0.058	0.29540
7518.80	1.3300	2.292	1.450	0.086	0.058	0.29392

WN	WL	N	K	DN	DK	R
7575.76	1.3200	2.287	1.443	0.086	0.058	0.29245
7633.59	1.3100	2.282	1.435	0.086	0.058	0.29095
7692.31	1.3000	2.277	1.427	0.085	0.058	0.28945
7751.94	1.2900	2.273	1.419	0.085	0.057	0.28795
7812.50	1.2800	2.268	1.412	0.084	0.057	0.28647
7874.02	1.2700	2.264	1.405	0.084	0.057	0.28510
7936.51	1.2600	2.258	1.397	0.083	0.057	0.28365
8000.00	1.2500	2.253	1.390	0.083	0.056	0.28208
8064.52	1.2400	2.248	1.382	0.082	0.056	0.28060
8130.08	1.2300	2.242	1.374	0.082	0.056	0.27902
8196.72	1.2200	2.237	1.366	0.082	0.056	0.27750
8264.46	1.2100	2.230	1.359	0.081	0.055	0.27590
8333.33	1.2000	2.223	1.347	0.080	0.055	0.27355
8403.36	1.1900	2.221	1.335	0.080	0.055	0.27151
8474.58	1.1800	2.219	1.327	0.079	0.055	0.27010
8547.01	1.1700	2.215	1.319	0.079	0.055	0.26860
8620.69	1.1600	2.212	1.311	0.078	0.055	0.26705
8695.65	1.1500	2.209	1.303	0.078	0.055	0.26558
8771.93	1.1400	2.205	1.295	0.077	0.054	0.26410
8849.56	1.1300	2.200	1.286	0.077	0.054	0.26246
8928.57	1.1200	2.197	1.277	0.076	0.054	0.26076
9009.01	1.1100	2.194	1.268	0.076	0.054	0.25920
9090.91	1.1000	2.191	1.260	0.075	0.054	0.25776
9174.31	1.0900	2.189	1.253	0.075	0.054	0.25639
9259.26	1.0800	2.185	1.246	0.075	0.054	0.25503
9345.79	1.0700	2.182	1.238	0.074	0.053	0.25360
9433.96	1.0600	2.178	1.230	0.074	0.053	0.25205
9523.81	1.0500	2.175	1.222	0.073	0.053	0.25055
9615.38	1.0400	2.171	1.214	0.073	0.053	0.24905
9708.74	1.0300	2.168	1.206	0.072	0.053	0.24758
9803.92	1.0200	2.165	1.198	0.072	0.053	0.24608
9900.99	1.0100	2.163	1.190	0.071	0.052	0.24460
10000.00	1.0000	2.161	1.183	0.071	0.052	0.24332
10101.01	0.9900	2.158	1.175	0.070	0.052	0.24196
10204.08	0.9800	2.156	1.168	0.070	0.052	0.24073
10309.28	0.9700	2.154	1.162	0.070	0.052	0.23959
10416.67	0.9600	2.150	1.156	0.069	0.052	0.23833
10526.32	0.9500	2.147	1.149	0.069	0.052	0.23701
10638.30	0.9400	2.145	1.142	0.068	0.051	0.23579
10752.69	0.9300	2.141	1.136	0.068	0.051	0.23456
10869.57	0.9200	2.138	1.130	0.068	0.051	0.23333
10989.01	0.9100	2.134	1.123	0.067	0.051	0.23198
11111.11	0.9000	2.131	1.115	0.067	0.051	0.23059
11235.96	0.8900	2.129	1.108	0.066	0.051	0.22932
11363.64	0.8800	2.128	1.103	0.066	0.051	0.22843
11494.25	0.8700	2.124	1.099	0.066	0.050	0.22754
11627.91	0.8600	2.119	1.094	0.065	0.050	0.22635
11764.71	0.8500	2.115	1.088	0.065	0.050	0.22506
11904.76	0.8400	2.110	1.082	0.065	0.050	0.22370
12048.19	0.8300	2.106	1.074	0.064	0.049	0.22218

WN	WL	N	K	DN	DK	R
12195.12	0.8200	2.103	1.067	0.064	0.049	0.22089
12345.68	0.8100	2.100	1.061	0.063	0.049	0.21966
12500.00	0.8000	2.097	1.056	0.063	0.049	0.21867
12658.23	0.7900	2.092	1.051	0.063	0.049	0.21759
12820.51	0.7800	2.088	1.046	0.062	0.049	0.21631
12987.01	0.7700	2.083	1.040	0.062	0.048	0.21508
13157.89	0.7600	2.078	1.035	0.062	0.048	0.21384
13333.33	0.7500	2.072	1.028	0.061	0.048	0.21231
13513.51	0.7400	2.067	1.020	0.061	0.048	0.21076
13698.63	0.7300	2.064	1.014	0.060	0.047	0.20944
13888.89	0.7200	2.059	1.008	0.060	0.047	0.20814
14084.51	0.7100	2.055	1.002	0.060	0.047	0.20679
14285.71	0.7000	2.050	0.995	0.059	0.047	0.20543
14492.75	0.6900	2.045	0.989	0.059	0.047	0.20405
14705.88	0.6800	2.040	0.982	0.058	0.046	0.20252
14925.37	0.6700	2.036	0.974	0.058	0.046	0.20100
15151.52	0.6600	2.033	0.966	0.057	0.046	0.19955
15384.62	0.6500	2.033	0.961	0.057	0.046	0.19867
15625.00	0.6400	2.028	0.960	0.057	0.046	0.19814
15873.02	0.6300	2.020	0.954	0.057	0.045	0.19641
16129.03	0.6200	2.016	0.945	0.056	0.045	0.19484
16393.44	0.6100	2.012	0.940	0.056	0.045	0.19360
16666.67	0.6000	2.009	0.933	0.055	0.045	0.19235
16949.15	0.5900	2.005	0.928	0.055	0.044	0.19120
17241.38	0.5800	2.002	0.923	0.055	0.044	0.19015
17543.86	0.5700	1.997	0.919	0.054	0.044	0.18906
17857.14	0.5600	1.993	0.912	0.054	0.044	0.18770
18181.82	0.5500	1.990	0.907	0.054	0.044	0.18666
18518.52	0.5400	1.987	0.903	0.053	0.044	0.18582
18867.92	0.5300	1.984	0.900	0.053	0.043	0.18498
19230.77	0.5200	1.980	0.896	0.053	0.043	0.18411
19607.84	0.5100	1.976	0.893	0.053	0.043	0.18323
20000.00	0.5000	1.972	0.890	0.053	0.043	0.18246
20408.16	0.4900	1.967	0.888	0.053	0.043	0.18171
20833.33	0.4800	1.961	0.886	0.052	0.042	0.18080
21276.60	0.4700	1.956	0.882	0.052	0.042	0.17980
21739.13	0.4600	1.951	0.879	0.052	0.042	0.17882
22222.22	0.4500	1.947	0.875	0.052	0.042	0.17795
22727.27	0.4400	1.944	0.872	0.051	0.042	0.17718
23255.81	0.4300	1.943	0.870	0.051	0.042	0.17671
23809.52	0.4200	1.942	0.870	0.051	0.042	0.17667
24390.24	0.4100	1.942	0.873	0.052	0.042	0.17705
25000.00	0.4000	1.940	0.879	0.052	0.042	0.17773
25641.03	0.3900	1.935	0.884	0.052	0.042	0.17825
26315.79	0.3800	1.930	0.890	0.053	0.041	0.17864
27027.03	0.3700	1.927	0.895	0.053	0.041	0.17912
27777.78	0.3600	1.927	0.902	0.053	0.041	0.18028
28571.43	0.3500	1.930	0.914	0.054	0.042	0.18246
29411.76	0.3400	1.934	0.937	0.055	0.042	0.18656
30303.03	0.3300	1.928	0.970	0.057	0.042	0.19143

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.916	1.000	0.059	0.042	0.19568
32258.06	0.3100	1.908	1.038	0.061	0.041	0.20166
33333.33	0.3000	1.892	1.094	0.065	0.040	0.21051
34482.76	0.2900	1.859	1.162	0.068	0.038	0.22151
35714.29	0.2800	1.802	1.243	0.073	0.034	0.23511
37037.04	0.2700	1.707	1.333	0.076	0.025	0.25237
38461.54	0.2600	1.548	1.413	0.084	0.034	0.27313
40000.00	0.2500	1.325	1.416	0.086	0.046	0.28751
41666.67	0.2400	1.125	1.312	0.080	0.051	0.28126
43478.26	0.2300	0.998	1.167	0.071	0.050	0.25719
45454.55	0.2200	0.918	1.022	0.064	0.047	0.22549
47619.05	0.2100	0.875	0.881	0.057	0.042	0.18713
50000.00	0.2000	0.827	0.761	0.051	0.040	0.15839

### 5.11 Pyrolytic Graphite

The measured reflectance spectra and computed values of  $n$  and  $k$  for the polished pyrolytic graphite sample are presented graphically in Figs. 99-103. Tabulations of the reflectance,  $n$ , and  $k$  are presented following the graphs.

The first derivative of the infrared reflectance spectrum of pyrolytic graphite is presented in Fig. 104. We observe the  $2,000\text{ cm}^{-1}$  and  $1,580\text{ cm}^{-1}$  features plus an additional feature at about  $630\text{ cm}^{-1}$ .

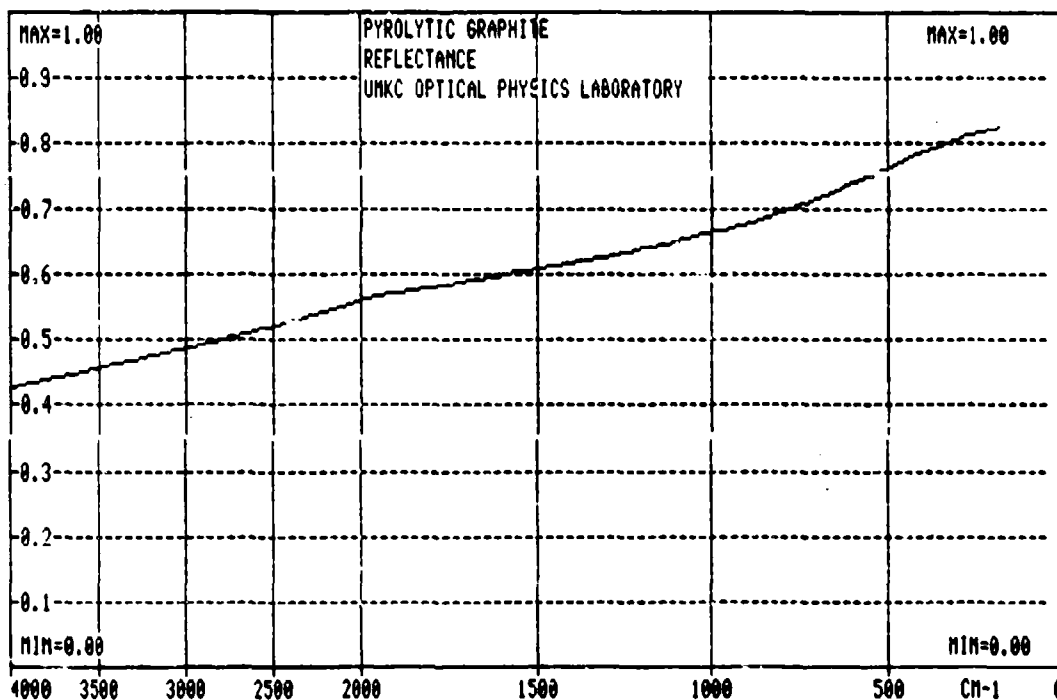


Figure 99. The infrared (4,000–180  $\text{cm}^{-1}$ ) reflectance spectrum of pyrolytic graphite.

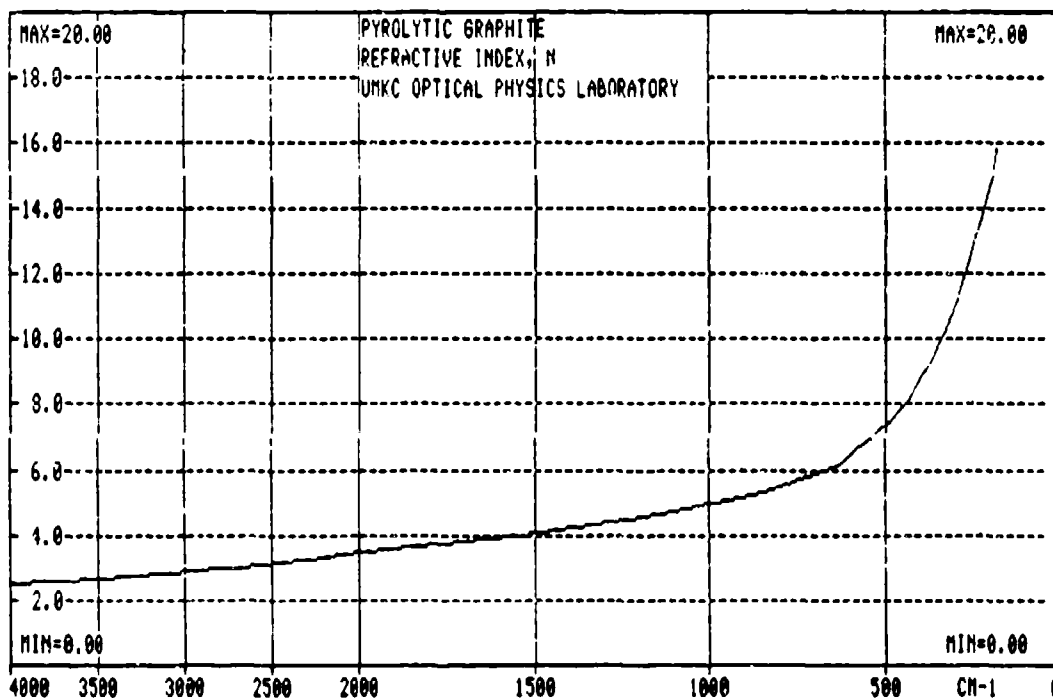


Figure 100. The infrared (4,000–180  $\text{cm}^{-1}$ ) refractive index  $n$  for pyrolytic graphite.

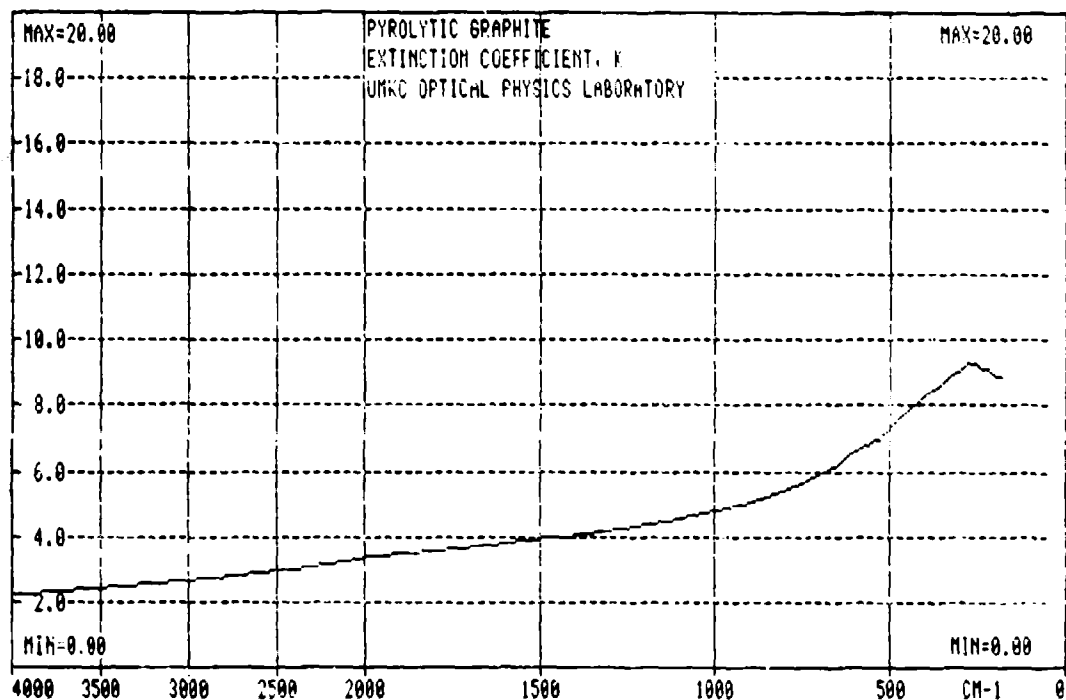


Figure 101. The infrared (4,000-180  $\text{cm}^{-1}$ ) extinction coefficient  $k$  for pyrolytic graphite.

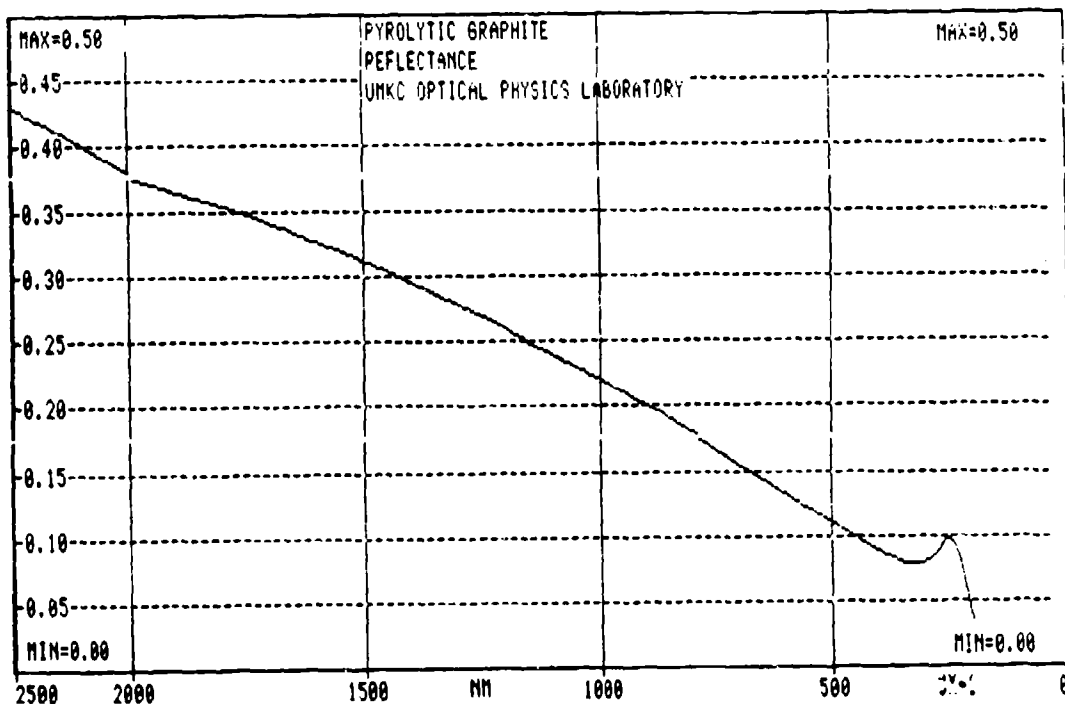


Figure 102. The uv-vis-nir (2,500-200 nm) reflectance spectrum of pyrolytic graphite.

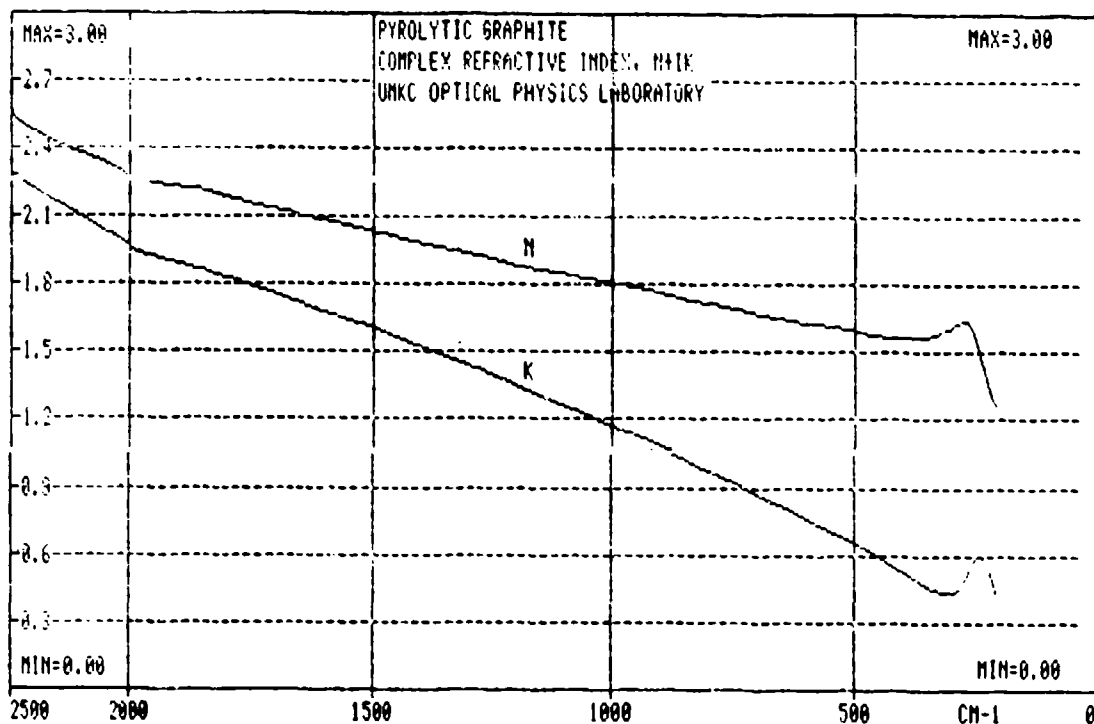


Figure 103. The uv-vis-nir (2,500–210 nm) complex refractive indices  $n$  and  $k$  of pyrolytic graphite.

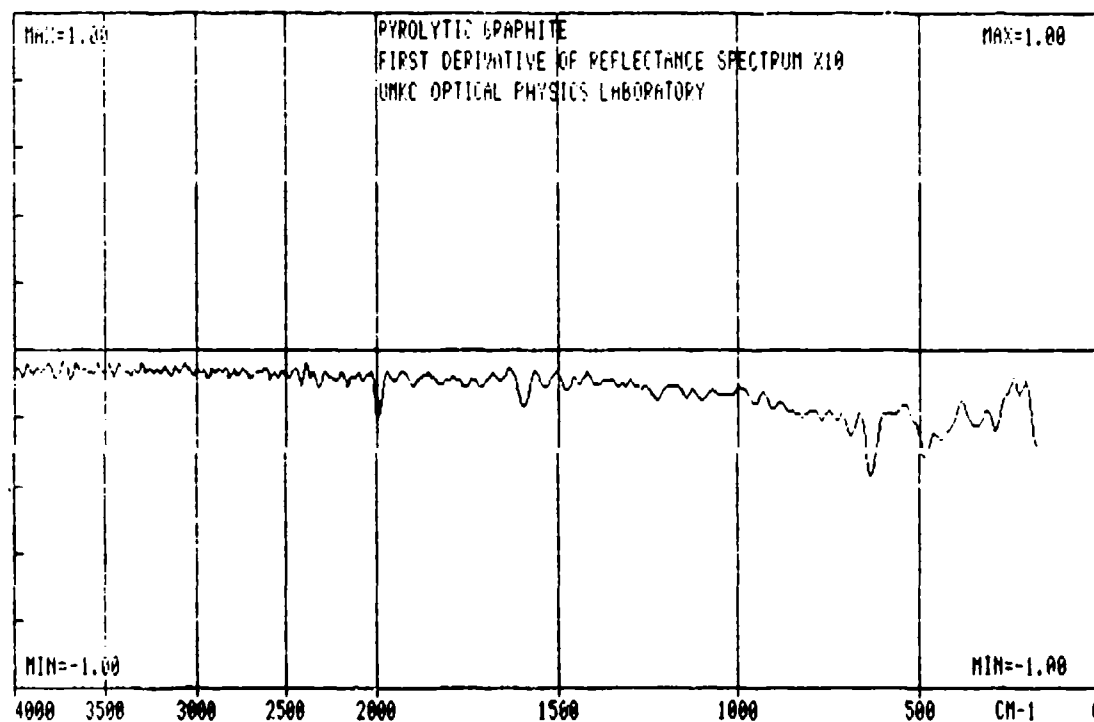


Figure 104. The first derivative of the infrared reflectance spectrum of pyrolytic graphite.



WN	WL	N	K	DN	DK	R
180.00	55.5556	16.092	8.794	0.843	0.960	0.82680
190.00	52.6316	15.416	8.874	0.810	0.933	0.82396
200.00	50.0000	14.955	8.878	0.781	0.901	0.82161
210.00	47.6190	14.597	8.938	0.760	0.879	0.82037
220.00	45.4545	14.194	9.101	0.739	0.859	0.82006
230.00	43.4783	13.742	9.110	0.713	0.825	0.81303
240.00	41.6667	13.396	9.144	0.694	0.800	0.81684
250.00	40.0000	13.029	9.235	0.676	0.774	0.81633
260.00	38.4615	12.621	9.270	0.655	0.742	0.81511
270.00	37.0370	12.246	9.253	0.635	0.710	0.81346
280.00	35.7143	11.876	9.266	0.616	0.679	0.81232
290.00	34.4828	11.487	9.217	0.596	0.644	0.81034
300.00	33.3333	11.156	9.117	0.578	0.613	0.80785
310.00	32.2581	10.868	9.033	0.563	0.586	0.80569
320.00	31.2500	10.614	8.966	0.550	0.562	0.80392
330.00	30.3030	10.332	8.901	0.536	0.536	0.80211
340.00	29.4118	10.072	8.814	0.522	0.512	0.79999
350.00	28.5714	9.835	8.710	0.510	0.490	0.79762
360.00	27.7778	9.618	8.625	0.499	0.470	0.79560
370.00	27.0270	9.409	8.524	0.489	0.451	0.79326
380.00	26.3158	9.233	8.444	0.480	0.435	0.79138
390.00	25.6410	9.042	8.384	0.471	0.417	0.78987
400.00	25.0000	8.840	8.322	0.462	0.399	0.78831
410.00	24.3902	8.636	8.232	0.452	0.380	0.78616
420.00	23.8095	8.450	8.135	0.443	0.364	0.78384
430.00	23.2558	8.276	8.037	0.435	0.348	0.78148
440.00	22.7273	8.109	7.934	0.426	0.334	0.77898
450.00	22.2222	7.963	7.818	0.419	0.322	0.77610
460.00	21.7391	7.830	7.720	0.412	0.311	0.77361
470.00	21.2766	7.695	7.629	0.406	0.299	0.77127
480.00	20.8333	7.566	7.524	0.401	0.291	0.76848
490.00	20.4082	7.451	7.406	0.395	0.283	0.76530
500.00	20.0000	7.367	7.299	0.388	0.274	0.76230
510.00	19.6078	7.290	7.223	0.384	0.269	0.76014
520.00	19.2308	7.208	7.137	0.380	0.262	0.75766
530.00	18.8679	7.128	7.072	0.377	0.258	0.75573
540.00	18.5185	7.050	7.016	0.375	0.254	0.75406
550.00	18.1818	6.962	6.960	0.373	0.251	0.75237
560.00	17.8571	6.871	6.904	0.371	0.247	0.75068
570.00	17.5439	6.779	6.842	0.369	0.244	0.74875
580.00	17.2414	6.695	6.780	0.366	0.240	0.74680
590.00	16.9492	6.607	6.723	0.364	0.237	0.74499
600.00	16.6667	6.521	6.661	0.362	0.233	0.74299
610.00	16.3934	6.434	6.602	0.359	0.230	0.74107
620.00	16.1290	6.334	6.535	0.357	0.226	0.73890
630.00	15.8730	6.240	6.442	0.352	0.220	0.73571
640.00	15.6250	6.171	6.338	0.345	0.213	0.73200
650.00	15.3846	6.136	6.247	0.339	0.206	0.72863
660.00	15.1515	6.102	6.187	0.335	0.201	0.72637
670.00	14.9254	6.059	6.134	0.332	0.198	0.72441

WN	WL	N	K	DN	DK	R
680.00	14.7059	6.005	6.080	0.329	0.195	0.72236
690.00	14.4928	5.950	6.016	0.325	0.190	0.71985
700.00	14.2857	5.908	5.948	0.321	0.186	0.71716
710.00	14.0845	5.878	5.898	0.318	0.182	0.71517
720.00	13.8889	5.833	5.847	0.315	0.179	0.71308
730.00	13.6986	5.794	5.799	0.312	0.176	0.71112
740.00	13.5135	5.755	5.751	0.309	0.173	0.70909
750.00	13.3333	5.720	5.705	0.306	0.170	0.70714
760.00	13.1579	5.678	5.664	0.304	0.168	0.70540
770.00	12.9870	5.639	5.618	0.301	0.165	0.70338
780.00	12.8205	5.601	5.570	0.299	0.162	0.70130
790.00	12.6582	5.571	5.527	0.296	0.159	0.69936
800.00	12.5000	5.535	5.491	0.294	0.157	0.69773
810.00	12.3457	5.499	5.449	0.292	0.155	0.69583
820.00	12.1951	5.463	5.407	0.289	0.153	0.69392
830.00	12.0482	5.430	5.367	0.287	0.150	0.69202
840.00	11.9048	5.401	5.323	0.284	0.147	0.68993
850.00	11.7647	5.373	5.286	0.282	0.145	0.68818
860.00	11.6279	5.342	5.247	0.280	0.143	0.68629
870.00	11.4943	5.317	5.208	0.278	0.142	0.68440
880.00	11.3636	5.294	5.173	0.277	0.141	0.68266
890.00	11.2360	5.269	5.144	0.275	0.140	0.68120
900.00	11.1111	5.240	5.112	0.274	0.138	0.67958
910.00	10.9890	5.216	5.077	0.272	0.137	0.67780
920.00	10.8696	5.195	5.044	0.271	0.136	0.67610
930.00	10.7527	5.175	5.020	0.269	0.135	0.67485
940.00	10.6383	5.150	4.995	0.268	0.134	0.67355
950.00	10.5263	5.120	4.966	0.266	0.132	0.67205
960.00	10.4167	5.098	4.934	0.265	0.132	0.67035
970.00	10.3093	5.079	4.909	0.264	0.131	0.66897
980.00	10.2041	5.058	4.885	0.263	0.130	0.66770
990.00	10.1010	5.037	4.863	0.261	0.129	0.66648
1000.00	10.0000	5.014	4.844	0.260	0.127	0.66542
1010.00	9.9010	4.988	4.822	0.259	0.126	0.66420
1020.00	9.8039	4.961	4.799	0.258	0.124	0.66295
1030.00	9.7087	4.937	4.774	0.256	0.123	0.66150
1040.00	9.6154	4.915	4.751	0.255	0.122	0.66020
1050.00	9.5238	4.889	4.727	0.254	0.121	0.65886
1060.00	9.4340	4.869	4.705	0.253	0.120	0.65760
1070.00	9.3458	4.845	4.683	0.252	0.119	0.65630
1080.00	9.2593	4.824	4.662	0.250	0.118	0.65507
1090.00	9.1743	4.798	4.640	0.249	0.116	0.65380
1100.00	9.0909	4.775	4.617	0.248	0.115	0.65240
1110.00	9.0090	4.755	4.589	0.247	0.114	0.65075
1120.00	8.9286	4.738	4.569	0.246	0.114	0.64958
1130.00	8.8496	4.717	4.551	0.245	0.112	0.64848
1140.00	8.7719	4.697	4.528	0.243	0.112	0.64705
1150.00	8.6957	4.678	4.505	0.242	0.111	0.64568
1160.00	8.6207	4.662	4.486	0.241	0.110	0.64446
1170.00	8.5470	4.646	4.471	0.240	0.109	0.64353

WN	WL	N	K	DN	DK	R
1180.00	8.4746	4.626	4.453	0.239	0.108	0.64243
1190.00	8.4034	4.605	4.434	0.238	0.107	0.64125
1200.00	8.3333	4.586	4.419	0.238	0.106	0.64025
1210.00	8.2645	4.561	4.400	0.236	0.105	0.63907
1220.00	8.1967	4.541	4.377	0.235	0.104	0.63758
1230.00	8.1301	4.523	4.356	0.234	0.103	0.63620
1240.00	8.0645	4.506	4.332	0.233	0.103	0.63465
1250.00	8.0000	4.495	4.316	0.232	0.102	0.63362
1260.00	7.9365	4.480	4.297	0.231	0.102	0.63237
1270.00	7.8740	4.464	4.283	0.231	0.101	0.63142
1280.00	7.8125	4.448	4.265	0.230	0.100	0.63020
1290.00	7.7519	4.436	4.250	0.229	0.100	0.62920
1300.00	7.6923	4.419	4.235	0.228	0.099	0.62820
1310.00	7.6336	4.404	4.219	0.227	0.098	0.62715
1320.00	7.5758	4.386	4.205	0.226	0.097	0.62619
1330.00	7.5188	4.373	4.190	0.226	0.097	0.62513
1340.00	7.4627	4.357	4.175	0.225	0.096	0.62411
1350.00	7.4074	4.342	4.161	0.224	0.095	0.62310
1360.00	7.3529	4.327	4.148	0.223	0.095	0.62225
1370.00	7.2993	4.310	4.134	0.222	0.094	0.62122
1380.00	7.2464	4.296	4.119	0.222	0.093	0.62017
1390.00	7.1942	4.280	4.107	0.221	0.092	0.61932
1400.00	7.1429	4.266	4.091	0.220	0.092	0.61820
1410.00	7.0922	4.254	4.079	0.220	0.091	0.61730
1420.00	7.0423	4.239	4.070	0.219	0.090	0.61672
1430.00	6.9930	4.220	4.061	0.218	0.089	0.61599
1440.00	6.9444	4.203	4.043	0.217	0.089	0.61473
1450.00	6.8966	4.190	4.031	0.217	0.088	0.61387
1460.00	6.8493	4.173	4.020	0.216	0.087	0.61305
1470.00	6.8027	4.155	4.006	0.215	0.086	0.61202
1480.00	6.7568	4.138	3.989	0.214	0.085	0.61079
1490.00	6.7114	4.130	3.975	0.214	0.085	0.60972
1500.00	6.6667	4.117	3.964	0.213	0.085	0.60888
1510.00	6.6225	4.103	3.955	0.212	0.084	0.60826
1520.00	6.5789	4.085	3.943	0.212	0.083	0.60735
1530.00	6.5359	4.069	3.931	0.211	0.082	0.60643
1540.00	6.4935	4.052	3.918	0.210	0.081	0.60543
1550.00	6.4516	4.043	3.904	0.210	0.081	0.60440
1560.00	6.4103	4.028	3.895	0.209	0.080	0.60372
1570.00	6.3694	4.010	3.888	0.209	0.080	0.60314
1580.00	6.3291	3.987	3.872	0.208	0.079	0.60190
1590.00	6.2893	3.969	3.850	0.207	0.078	0.60018
1600.00	6.2500	3.961	3.829	0.205	0.077	0.59857
1610.00	6.2112	3.956	3.815	0.205	0.078	0.59750
1620.00	6.1728	3.951	3.806	0.204	0.077	0.59677
1630.00	6.1350	3.939	3.799	0.204	0.077	0.59624
1640.00	6.0976	3.925	3.792	0.203	0.076	0.59562
1650.00	6.0606	3.909	3.780	0.203	0.075	0.59466
1660.00	6.0241	3.899	3.768	0.202	0.075	0.59371
1670.00	5.9880	3.886	3.760	0.202	0.075	0.59307

WN	WL	N	K	DN	DK	R
1680.00	5.9524	3.874	3.749	0.201	0.074	0.59223
1690.00	5.9172	3.858	3.740	0.201	0.074	0.59147
1700.00	5.8824	3.843	3.728	0.200	0.074	0.59047
1710.00	5.8480	3.829	3.715	0.200	0.074	0.58944
1720.00	5.8140	3.817	3.701	0.199	0.073	0.58832
1730.00	5.7803	3.806	3.690	0.198	0.073	0.58740
1740.00	5.7471	3.793	3.680	0.198	0.072	0.58654
1750.00	5.7143	3.779	3.667	0.197	0.072	0.58549
1760.00	5.6818	3.769	3.654	0.197	0.071	0.58436
1770.00	5.6497	3.757	3.643	0.196	0.071	0.58342
1780.00	5.6180	3.748	3.631	0.195	0.070	0.58246
1790.00	5.5866	3.737	3.622	0.195	0.070	0.58166
1800.00	5.5556	3.727	3.610	0.194	0.070	0.58068
1810.00	5.5249	3.714	3.600	0.194	0.069	0.57977
1820.00	5.4945	3.703	3.589	0.193	0.069	0.57886
1830.00	5.4645	3.693	3.576	0.192	0.068	0.57771
1840.00	5.4348	3.684	3.566	0.192	0.068	0.57689
1850.00	5.4054	3.675	3.558	0.192	0.068	0.57614
1860.00	5.3763	3.664	3.549	0.191	0.068	0.57542
1870.00	5.3476	3.652	3.540	0.191	0.067	0.57461
1880.00	5.3191	3.640	3.531	0.190	0.067	0.57382
1890.00	5.2910	3.628	3.519	0.190	0.067	0.57276
1900.00	5.2632	3.618	3.507	0.189	0.066	0.57169
1910.00	5.2356	3.611	3.498	0.189	0.066	0.57087
1920.00	5.2083	3.602	3.490	0.188	0.066	0.57020
1930.00	5.1813	3.588	3.483	0.188	0.066	0.56956
1940.00	5.1546	3.576	3.474	0.187	0.065	0.56873
1950.00	5.1282	3.563	3.463	0.187	0.065	0.56780
1960.00	5.1020	3.554	3.452	0.186	0.065	0.56679
1970.00	5.0761	3.541	3.444	0.186	0.065	0.56603
1980.00	5.0505	3.526	3.437	0.186	0.065	0.56538
1990.00	5.0251	3.507	3.421	0.185	0.064	0.56400
2000.00	5.0000	3.494	3.399	0.184	0.063	0.56192
2010.00	4.9751	3.491	3.776	0.182	0.062	0.55980
2020.00	4.9505	3.494	3.366	0.181	0.061	0.55842
2030.00	4.9261	3.490	3.359	0.181	0.061	0.55813
2040.00	4.9020	3.482	3.351	0.181	0.060	0.55742
2050.00	4.8780	3.477	3.342	0.180	0.060	0.55654
2060.00	4.8544	3.469	3.335	0.180	0.060	0.55588
2070.00	4.8309	3.460	3.327	0.179	0.059	0.55513
2080.00	4.8077	3.452	3.316	0.179	0.059	0.55407
2090.00	4.7847	3.447	3.307	0.178	0.059	0.55322
2100.00	4.7619	3.438	3.302	0.178	0.059	0.55268
2110.00	4.7393	3.430	3.292	0.177	0.058	0.55180
2120.00	4.7170	3.421	3.284	0.177	0.058	0.55098
2130.00	4.6948	3.414	3.277	0.177	0.058	0.55026
2140.00	4.6729	3.406	3.269	0.176	0.057	0.54949
2150.00	4.6512	3.396	3.258	0.176	0.057	0.54847
2160.00	4.6296	3.388	3.249	0.175	0.057	0.54751
2170.00	4.6083	3.383	3.239	0.175	0.056	0.54655

WN	WL	N	K	DN	DK	R
2180.00	4.5872	3.377	3.231	0.174	0.056	0.54579
2190.00	4.5662	3.368	3.225	0.174	0.056	0.54516
2200.00	4.5455	3.361	3.217	0.173	0.056	0.54436
2210.00	4.5249	3.352	3.208	0.173	0.055	0.54347
2220.00	4.5045	3.345	3.199	0.172	0.055	0.54260
2230.00	4.4843	3.337	3.191	0.172	0.055	0.54173
2240.00	4.4643	3.331	3.181	0.171	0.054	0.54079
2250.00	4.4444	3.324	3.174	0.171	0.054	0.54005
2260.00	4.4248	3.318	3.166	0.171	0.054	0.53920
2270.00	4.4053	3.312	3.160	0.170	0.054	0.53859
2280.00	4.3860	3.302	3.153	0.170	0.053	0.53790
2290.00	4.3668	3.294	3.145	0.170	0.053	0.53708
2300.00	4.3478	3.285	3.134	0.169	0.053	0.53594
2310.00	4.3290	3.280	3.124	0.168	0.052	0.53490
2320.00	4.3103	3.275	3.115	0.168	0.052	0.53395
2330.00	4.2918	3.272	3.107	0.168	0.052	0.53313
2340.00	4.2735	3.266	3.101	0.167	0.052	0.53252
2350.00	4.2553	3.259	3.093	0.167	0.052	0.53170
2360.00	4.2373	3.254	3.086	0.167	0.052	0.53090
2370.00	4.2194	3.251	3.080	0.166	0.052	0.53032
2380.00	4.2017	3.245	3.077	0.166	0.051	0.53005
2390.00	4.1841	3.235	3.073	0.166	0.051	0.52953
2400.00	4.1667	3.225	3.064	0.165	0.050	0.52858
2410.00	4.1494	3.219	3.054	0.165	0.050	0.52753
2420.00	4.1322	3.214	3.045	0.164	0.050	0.52664
2430.00	4.1152	3.210	3.039	0.164	0.050	0.52594
2440.00	4.0984	3.205	3.034	0.164	0.050	0.52544
2450.00	4.0816	3.198	3.028	0.164	0.050	0.52482
2460.00	4.0650	3.190	3.024	0.163	0.049	0.52430
2470.00	4.0486	3.183	3.017	0.163	0.049	0.52353
2480.00	4.0323	3.177	3.009	0.162	0.049	0.52273
2490.00	4.0161	3.170	3.002	0.162	0.049	0.52194
2500.00	4.0000	3.165	2.995	0.162	0.049	0.52118
2510.00	3.9841	3.157	2.989	0.161	0.048	0.52052
2520.00	3.9683	3.152	2.982	0.161	0.048	0.51975
2530.00	3.9526	3.146	2.977	0.161	0.048	0.51919
2540.00	3.9370	3.138	2.969	0.160	0.048	0.51835
2550.00	3.9216	3.132	2.962	0.160	0.048	0.51755
2560.00	3.9063	3.127	2.955	0.160	0.047	0.51672
2570.00	3.8911	3.122	2.949	0.159	0.047	0.51610
2580.00	3.8760	3.114	2.943	0.159	0.047	0.51542
2590.00	3.8610	3.109	2.934	0.159	0.047	0.51438
2600.00	3.8462	3.106	2.927	0.158	0.047	0.51366
2610.00	3.8314	3.101	2.922	0.158	0.047	0.51311
2620.00	3.8168	3.095	2.918	0.158	0.047	0.51263
2630.00	3.8023	3.089	2.912	0.157	0.046	0.51195
2640.00	3.7879	3.082	2.906	0.157	0.046	0.51130
2650.00	3.7736	3.076	2.900	0.157	0.046	0.51054
2660.00	3.7594	3.071	2.894	0.156	0.046	0.50988
2670.00	3.7453	3.065	2.888	0.156	0.045	0.50924

WN	WL	N	K	DN	DK	R
2680.00	3.7313	3.057	2.882	0.156	0.045	0.50847
2690.00	3.7175	3.052	2.875	0.155	0.045	0.50771
2700.00	3.7037	3.047	2.868	0.155	0.045	0.50687
2710.00	3.6900	3.043	2.861	0.155	0.045	0.50608
2720.00	3.6765	3.038	2.856	0.155	0.045	0.50553
2730.00	3.6630	3.033	2.851	0.154	0.045	0.50497
2740.00	3.6496	3.027	2.845	0.154	0.044	0.50424
2750.00	3.6364	3.021	2.840	0.154	0.044	0.50369
2760.00	3.6232	3.015	2.833	0.153	0.044	0.50281
2770.00	3.6101	3.011	2.827	0.153	0.044	0.50208
2780.00	3.5971	3.006	2.821	0.153	0.044	0.50138
2790.00	3.5842	3.000	2.817	0.152	0.044	0.50093
2800.00	3.5714	2.994	2.808	0.152	0.043	0.49992
2810.00	3.5587	2.991	2.803	0.152	0.043	0.49923
2820.00	3.5461	2.987	2.797	0.152	0.043	0.49855
2830.00	3.5336	2.982	2.794	0.151	0.043	0.49818
2840.00	3.5211	2.976	2.788	0.151	0.043	0.49744
2850.00	3.5088	2.971	2.783	0.151	0.043	0.49689
2860.00	3.4965	2.966	2.777	0.150	0.043	0.49621
2870.00	3.4843	2.962	2.773	0.150	0.043	0.49565
2880.00	3.4722	2.956	2.767	0.150	0.042	0.49499
2890.00	3.4602	2.951	2.762	0.150	0.042	0.49432
2900.00	3.4483	2.946	2.756	0.149	0.042	0.49363
2910.00	3.4364	2.942	2.752	0.149	0.042	0.49315
2920.00	3.4247	2.934	2.748	0.149	0.042	0.49264
2930.00	3.4130	2.928	2.740	0.148	0.041	0.49166
2940.00	3.4014	2.923	2.733	0.148	0.041	0.49087
2950.00	3.3898	2.921	2.727	0.148	0.041	0.49007
2960.00	3.3784	2.916	2.724	0.148	0.041	0.48969
2970.00	3.3670	2.911	2.718	0.147	0.041	0.48895
2980.00	3.3557	2.907	2.712	0.147	0.041	0.48818
2990.00	3.3445	2.903	2.707	0.147	0.041	0.48758
3000.00	3.3333	2.899	2.703	0.147	0.041	0.48706
3010.00	3.3223	2.893	2.698	0.146	0.041	0.48645
3020.00	3.3113	2.888	2.692	0.146	0.040	0.48574
3030.00	3.3003	2.884	2.686	0.146	0.040	0.48501
3040.00	3.2895	2.880	2.681	0.146	0.040	0.48440
3050.00	3.2787	2.877	2.676	0.145	0.040	0.48375
3060.00	3.2680	2.873	2.673	0.145	0.040	0.48338
3070.00	3.2573	2.869	2.668	0.145	0.040	0.48278
3080.00	3.2468	2.864	2.665	0.145	0.040	0.48242
3090.00	3.2362	2.858	2.659	0.144	0.040	0.48165
3100.00	3.2258	2.853	2.654	0.144	0.039	0.48102
3110.00	3.2154	2.850	2.649	0.144	0.039	0.48038
3120.00	3.2051	2.845	2.647	0.144	0.039	0.48006
3130.00	3.1949	2.839	2.642	0.143	0.039	0.47942
3140.00	3.1847	2.833	2.636	0.143	0.039	0.47871
3150.00	3.1746	2.830	2.629	0.143	0.039	0.47784
3160.00	3.1646	2.826	2.626	0.143	0.039	0.47733
3170.00	3.1546	2.822	2.621	0.142	0.039	0.47680

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.815	2.617	0.142	0.038	0.47618
3190.00	3.1348	2.811	2.612	0.142	0.038	0.47554
3200.00	3.1250	2.808	2.607	0.142	0.038	0.47496
3210.00	3.1153	2.803	2.602	0.141	0.038	0.47434
3220.00	3.1056	2.799	2.597	0.141	0.038	0.47368
3230.00	3.0960	2.795	2.592	0.141	0.038	0.47302
3240.00	3.0864	2.791	2.588	0.141	0.038	0.47242
3250.00	3.0769	2.786	2.583	0.140	0.038	0.47185
3260.00	3.0675	2.782	2.579	0.140	0.037	0.47127
3270.00	3.0581	2.778	2.573	0.140	0.037	0.47048
3280.00	3.0488	2.776	2.569	0.140	0.037	0.47003
3290.00	3.0395	2.771	2.567	0.140	0.037	0.46969
3300.00	3.0303	2.765	2.563	0.139	0.037	0.46924
3310.00	3.0211	2.759	2.557	0.139	0.037	0.46837
3320.00	3.0120	2.756	2.552	0.139	0.037	0.46778
3330.00	3.0030	2.751	2.548	0.139	0.036	0.46722
3340.00	2.9940	2.746	2.543	0.138	0.036	0.46655
3350.00	2.9851	2.742	2.537	0.138	0.036	0.46573
3360.00	2.9762	2.739	2.532	0.138	0.036	0.46504
3370.00	2.9674	2.734	2.527	0.137	0.036	0.46439
3380.00	2.9586	2.731	2.522	0.137	0.036	0.46367
3390.00	2.9499	2.728	2.517	0.137	0.036	0.46304
3400.00	2.9412	2.725	2.513	0.137	0.036	0.46248
3410.00	2.9326	2.721	2.509	0.137	0.036	0.46203
3420.00	2.9240	2.718	2.506	0.136	0.036	0.46156
3430.00	2.9155	2.713	2.503	0.136	0.036	0.46110
3440.00	2.9070	2.708	2.498	0.136	0.035	0.46042
3450.00	2.8986	2.703	2.493	0.136	0.035	0.45979
3460.00	2.8902	2.701	2.486	0.135	0.035	0.45887
3470.00	2.8818	2.698	2.484	0.135	0.035	0.45853
3480.00	2.8736	2.694	2.480	0.135	0.035	0.45798
3490.00	2.8653	2.689	2.476	0.135	0.035	0.45742
3500.00	2.8571	2.685	2.470	0.135	0.035	0.45667
3510.00	2.8490	2.682	2.466	0.134	0.035	0.45608
3520.00	2.8409	2.676	2.461	0.134	0.035	0.45537
3530.00	2.8329	2.675	2.457	0.134	0.035	0.45487
3540.00	2.8249	2.671	2.453	0.134	0.035	0.45435
3550.00	2.8169	2.667	2.450	0.133	0.034	0.45387
3560.00	2.8090	2.661	2.445	0.133	0.034	0.45319
3570.00	2.8011	2.659	2.440	0.133	0.034	0.45247
3580.00	2.7933	2.655	2.435	0.133	0.034	0.45176
3590.00	2.7855	2.652	2.431	0.133	0.034	0.45118
3600.00	2.7778	2.648	2.426	0.132	0.034	0.45049
3610.00	2.7701	2.646	2.421	0.132	0.034	0.44983
3620.00	2.7624	2.642	2.418	0.132	0.034	0.44935
3630.00	2.7548	2.639	2.413	0.132	0.034	0.44875
3640.00	2.7473	2.635	2.409	0.131	0.034	0.44816
3650.00	2.7397	2.633	2.405	0.131	0.034	0.44752
3660.00	2.7322	2.630	2.402	0.131	0.034	0.44716
3670.00	2.7248	2.626	2.399	0.131	0.034	0.44666

## PYROLYTIC GRAPHITE

PAGE B

WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.619	2.395	0.131	0.033	0.44613
3690.00	2.7100	2.615	2.388	0.130	0.033	0.44513
3700.00	2.7027	2.614	2.383	0.130	0.033	0.44438
3710.00	2.6954	2.612	2.378	0.130	0.033	0.44369
3720.00	2.6882	2.610	2.376	0.130	0.033	0.44342
3730.00	2.6810	2.607	2.373	0.130	0.033	0.44299
3740.00	2.6738	2.602	2.370	0.129	0.033	0.44259
3750.00	2.6667	2.597	2.365	0.129	0.033	0.44176
3760.00	2.6596	2.593	2.360	0.129	0.033	0.44107
3770.00	2.6525	2.590	2.354	0.129	0.033	0.44022
3780.00	2.6455	2.589	2.348	0.128	0.033	0.43935
3790.00	2.6385	2.587	2.344	0.128	0.033	0.43878
3800.00	2.6316	2.586	2.341	0.128	0.033	0.43836
3810.00	2.6247	2.582	2.338	0.128	0.033	0.43795
3820.00	2.6178	2.580	2.334	0.128	0.033	0.43737
3830.00	2.6110	2.576	2.331	0.127	0.033	0.43689
3840.00	2.6042	2.572	2.327	0.127	0.033	0.43624
3850.00	2.5974	2.571	2.322	0.127	0.033	0.43561
3860.00	2.5907	2.568	2.318	0.127	0.033	0.43494
3870.00	2.5840	2.565	2.315	0.127	0.033	0.43454
3880.00	2.5773	2.562	2.311	0.126	0.032	0.43390
3890.00	2.5707	2.559	2.306	0.126	0.032	0.43320
3900.00	2.5641	2.556	2.301	0.126	0.032	0.43250
3910.00	2.5575	2.555	2.297	0.126	0.033	0.43189
3920.00	2.5510	2.554	2.293	0.126	0.033	0.43130
3930.00	2.5445	2.552	2.291	0.125	0.033	0.43096
3940.00	2.5381	2.549	2.287	0.125	0.032	0.43042
3950.00	2.5316	2.546	2.282	0.125	0.033	0.42961
3960.00	2.5253	2.545	2.276	0.125	0.033	0.42872
3970.00	2.5189	2.547	2.271	0.125	0.033	0.42813
3980.00	2.5126	2.548	2.268	0.124	0.033	0.42761
3990.00	2.5063	2.551	2.264	0.124	0.033	0.42706
4000.00	2.5000	2.573	2.269	0.125	0.035	0.42787
4016.06	2.4900	2.542	2.285	0.125	0.032	0.43005
4032.26	2.4800	2.530	2.279	0.125	0.032	0.42918
4048.58	2.4700	2.521	2.273	0.124	0.031	0.42830
4065.04	2.4600	2.512	2.267	0.124	0.031	0.42740
4081.63	2.4500	2.504	2.260	0.124	0.031	0.42632
4098.36	2.4400	2.498	2.253	0.123	0.030	0.42521
4115.23	2.4300	2.492	2.245	0.123	0.030	0.42403
4132.23	2.4200	2.487	2.238	0.123	0.030	0.42299
4149.38	2.4100	2.482	2.232	0.122	0.030	0.42205
4166.67	2.4000	2.477	2.226	0.122	0.030	0.42105
4184.10	2.3900	2.472	2.220	0.122	0.030	0.42018
4201.68	2.3800	2.466	2.214	0.121	0.030	0.41920
4219.41	2.3700	2.462	2.208	0.121	0.030	0.41827
4237.29	2.3600	2.456	2.202	0.121	0.030	0.41739
4255.32	2.3500	2.450	2.196	0.120	0.029	0.41640
4273.50	2.3400	2.445	2.189	0.120	0.029	0.41534
4291.85	2.3300	2.440	2.182	0.120	0.029	0.41421



WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.436	2.175	0.119	0.029	0.41323
4329.00	2.3100	2.431	2.170	0.119	0.029	0.41241
4347.83	2.3000	2.426	2.165	0.119	0.029	0.41166
4366.81	2.2900	2.419	2.160	0.119	0.029	0.41083
4385.96	2.2800	2.412	2.153	0.118	0.028	0.40974
4405.29	2.2700	2.406	2.145	0.118	0.028	0.40849
4424.78	2.2600	2.400	2.138	0.117	0.028	0.40726
4444.44	2.2500	2.394	2.129	0.117	0.028	0.40590
4464.29	2.2400	2.391	2.121	0.117	0.028	0.40453
4484.30	2.2300	2.387	2.114	0.116	0.028	0.40344
4504.50	2.2200	2.383	2.107	0.116	0.028	0.40230
4524.89	2.2100	2.379	2.100	0.116	0.028	0.40116
4545.45	2.2000	2.376	2.093	0.115	0.028	0.40011
4566.21	2.1900	2.372	2.087	0.115	0.028	0.39910
4587.16	2.1800	2.367	2.081	0.115	0.028	0.39809
4608.29	2.1700	2.363	2.075	0.114	0.028	0.39712
4629.63	2.1600	2.358	2.069	0.114	0.028	0.39614
4651.16	2.1500	2.354	2.062	0.114	0.028	0.39500
4672.90	2.1400	2.350	2.056	0.113	0.028	0.39406
4694.84	2.1300	2.345	2.051	0.113	0.028	0.39310
4716.98	2.1200	2.341	2.045	0.113	0.028	0.39215
4739.34	2.1100	2.336	2.038	0.112	0.028	0.39106
4761.90	2.1000	2.331	2.032	0.112	0.028	0.39002
4784.69	2.0900	2.327	2.026	0.112	0.028	0.38906
4807.69	2.0800	2.321	2.021	0.112	0.027	0.38815
4830.92	2.0700	2.316	2.015	0.111	0.027	0.38707
4854.37	2.0600	2.311	2.009	0.111	0.027	0.38610
4878.05	2.0500	2.305	2.003	0.111	0.027	0.38505
4901.96	2.0400	2.299	1.997	0.110	0.027	0.38405
4926.11	2.0300	2.293	1.991	0.110	0.027	0.38305
4950.50	2.0200	2.286	1.985	0.110	0.026	0.38199
4975.12	2.0100	2.277	1.979	0.109	0.026	0.38093
5000.00	2.0000	2.266	1.965	0.109	0.026	0.37850
5025.13	1.9900	2.266	1.950	0.108	0.026	0.37596
5050.51	1.9800	2.266	1.944	0.108	0.027	0.37497
5076.14	1.9700	2.263	1.937	0.107	0.027	0.37384
5102.04	1.9600	2.260	1.931	0.107	0.027	0.37280
5128.21	1.9500	2.255	1.925	0.107	0.027	0.37164
5154.64	1.9400	2.251	1.918	0.106	0.027	0.37041
5181.35	1.9300	2.247	1.910	0.106	0.027	0.36916
5208.33	1.9200	2.243	1.903	0.106	0.027	0.36792
5235.60	1.9100	2.239	1.896	0.105	0.027	0.36669
5263.16	1.9000	2.236	1.890	0.105	0.027	0.36555
5291.01	1.8900	2.232	1.884	0.105	0.027	0.36446
5319.15	1.8800	2.227	1.877	0.104	0.027	0.36318
5347.59	1.8700	2.224	1.868	0.104	0.027	0.36177
5376.34	1.8600	2.223	1.864	0.104	0.027	0.36100
5405.41	1.8500	2.217	1.861	0.103	0.027	0.36033
5434.78	1.8400	2.212	1.854	0.103	0.026	0.35912
5464.48	1.8300	2.207	1.848	0.103	0.026	0.35800

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.202	1.841	0.102	0.026	0.35688
5524.86	1.8100	2.197	1.836	0.102	0.026	0.35587
5555.56	1.8000	2.191	1.831	0.102	0.026	0.35489
5586.59	1.7900	2.184	1.824	0.101	0.026	0.35359
5617.98	1.7800	2.179	1.817	0.101	0.026	0.35228
5649.72	1.7700	2.174	1.809	0.101	0.026	0.35096
5681.82	1.7600	2.168	1.802	0.100	0.026	0.34969
5714.29	1.7500	2.162	1.795	0.100	0.025	0.34835
5747.13	1.7400	2.157	1.788	0.100	0.025	0.34692
5780.35	1.7300	2.151	1.780	0.099	0.025	0.34550
5813.95	1.7200	2.146	1.772	0.099	0.025	0.34406
5847.95	1.7100	2.141	1.765	0.098	0.025	0.34264
5882.35	1.7000	2.137	1.757	0.098	0.025	0.34119
5917.16	1.6900	2.132	1.749	0.098	0.025	0.33980
5952.38	1.6800	2.127	1.741	0.097	0.025	0.33829
5988.02	1.6700	2.124	1.735	0.097	0.025	0.33718
6024.10	1.6600	2.116	1.730	0.097	0.025	0.33618
6060.61	1.6500	2.108	1.720	0.096	0.025	0.33427
6097.56	1.6400	2.105	1.710	0.096	0.025	0.33231
6134.97	1.6300	2.101	1.702	0.095	0.025	0.33082
6172.84	1.6200	2.097	1.694	0.095	0.025	0.32935
6211.18	1.6100	2.094	1.687	0.094	0.025	0.32793
6250.00	1.6000	2.090	1.680	0.094	0.025	0.32659
6289.31	1.5900	2.085	1.673	0.094	0.025	0.32535
6329.11	1.5800	2.081	1.666	0.093	0.025	0.32394
6369.43	1.5700	2.076	1.660	0.093	0.025	0.32265
6410.26	1.5600	2.071	1.652	0.093	0.025	0.32119
6451.61	1.5500	2.066	1.646	0.092	0.025	0.31995
6493.51	1.5400	2.059	1.638	0.092	0.025	0.31844
6535.95	1.5300	2.055	1.630	0.091	0.025	0.31689
6578.95	1.5200	2.050	1.624	0.091	0.024	0.31557
6622.52	1.5100	2.043	1.616	0.091	0.024	0.31406
6666.67	1.5000	2.038	1.608	0.090	0.024	0.31241
6711.41	1.4900	2.032	1.600	0.090	0.024	0.31077
6756.76	1.4800	2.028	1.591	0.089	0.024	0.30916
6802.72	1.4700	2.022	1.584	0.089	0.024	0.30760
6849.32	1.4600	2.017	1.576	0.089	0.024	0.30599
6896.55	1.4500	2.012	1.567	0.088	0.024	0.30434
6944.44	1.4400	2.006	1.559	0.088	0.024	0.30270
6993.01	1.4300	2.001	1.551	0.087	0.024	0.30094
7042.25	1.4200	1.996	1.543	0.087	0.024	0.29930
7092.20	1.4100	1.990	1.533	0.086	0.024	0.29746
7142.86	1.4000	1.986	1.524	0.086	0.024	0.29564
7194.24	1.3900	1.981	1.516	0.085	0.024	0.29396
7246.38	1.3800	1.976	1.508	0.085	0.024	0.29223
7299.27	1.3700	1.971	1.499	0.084	0.024	0.29043
7352.94	1.3600	1.967	1.490	0.084	0.024	0.28868
7407.41	1.3500	1.962	1.482	0.084	0.024	0.28689
7462.69	1.3400	1.958	1.473	0.083	0.024	0.28509
7518.80	1.3300	1.954	1.465	0.083	0.024	0.28339

## PYROLYTIC GRAPHITE

PAGE 11

WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.949	1.456	0.082	0.024	0.28165
7633.59	1.3100	1.945	1.448	0.082	0.024	0.27997
7692.31	1.3000	1.940	1.440	0.081	0.024	0.27836
7751.94	1.2900	1.935	1.432	0.081	0.024	0.27659
7812.50	1.2800	1.930	1.424	0.080	0.024	0.27486
7874.02	1.2700	1.925	1.416	0.080	0.024	0.27318
7936.51	1.2600	1.920	1.407	0.080	0.024	0.27142
8000.00	1.2500	1.914	1.399	0.079	0.024	0.26957
8064.52	1.2400	1.909	1.390	0.079	0.024	0.26779
8130.08	1.2300	1.904	1.382	0.078	0.024	0.26602
8196.72	1.2200	1.898	1.374	0.078	0.024	0.26421
8264.46	1.2100	1.891	1.366	0.077	0.023	0.26243
8333.33	1.2000	1.882	1.352	0.077	0.023	0.25951
8403.36	1.1900	1.880	1.338	0.076	0.024	0.25657
8474.58	1.1800	1.878	1.329	0.075	0.024	0.25488
8547.01	1.1700	1.874	1.321	0.075	0.024	0.25298
8620.69	1.1600	1.871	1.311	0.074	0.024	0.25095
8695.65	1.1500	1.867	1.302	0.074	0.024	0.24908
8771.93	1.1400	1.863	1.293	0.073	0.024	0.24716
8849.56	1.1300	1.859	1.284	0.073	0.024	0.24525
8928.57	1.1200	1.856	1.275	0.072	0.024	0.24330
9009.01	1.1100	1.852	1.266	0.072	0.024	0.24148
9090.91	1.1000	1.848	1.257	0.071	0.024	0.23957
9174.31	1.0900	1.844	1.249	0.071	0.024	0.23769
9259.26	1.0800	1.840	1.240	0.070	0.024	0.23585
9345.79	1.0700	1.836	1.231	0.070	0.024	0.23382
9433.96	1.0600	1.831	1.222	0.069	0.024	0.23194
9523.81	1.0500	1.827	1.213	0.069	0.024	0.22992
9615.38	1.0400	1.823	1.204	0.068	0.024	0.22795
9708.74	1.0300	1.819	1.194	0.068	0.024	0.22595
9803.92	1.0200	1.815	1.185	0.067	0.024	0.22390
9900.99	1.0100	1.811	1.176	0.067	0.024	0.22191
10000.00	1.0000	1.807	1.167	0.066	0.024	0.22005
10101.01	0.9900	1.804	1.158	0.066	0.024	0.21812
10204.08	0.9800	1.800	1.149	0.065	0.024	0.21618
10309.28	0.9700	1.796	1.141	0.065	0.024	0.21433
10416.67	0.9600	1.792	1.132	0.064	0.024	0.21255
10526.32	0.9500	1.787	1.124	0.064	0.024	0.21075
10638.30	0.9400	1.783	1.116	0.063	0.024	0.20879
10752.69	0.9300	1.778	1.107	0.063	0.024	0.20688
10869.57	0.9200	1.773	1.098	0.062	0.024	0.20487
10989.01	0.9100	1.768	1.090	0.062	0.024	0.20298
11111.11	0.9000	1.762	1.080	0.061	0.024	0.20069
11235.96	0.8900	1.758	1.070	0.061	0.024	0.19868
11363.64	0.8800	1.754	1.062	0.060	0.024	0.19675
11494.25	0.8700	1.748	1.054	0.060	0.024	0.19488
11627.91	0.8600	1.741	1.044	0.059	0.024	0.19250
11764.71	0.8500	1.736	1.032	0.059	0.024	0.19004
11904.76	0.8400	1.731	1.022	0.058	0.024	0.18777
12048.19	0.8300	1.725	1.011	0.057	0.024	0.18530

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.721	0.999	0.057	0.024	0.18277
12345.68	0.8100	1.718	0.988	0.056	0.024	0.18039
12500.00	0.8000	1.716	0.979	0.055	0.024	0.17842
12658.23	0.7900	1.711	0.970	0.055	0.024	0.17648
12820.51	0.7800	1.706	0.960	0.054	0.024	0.17421
12987.01	0.7700	1.702	0.950	0.054	0.024	0.17197
13157.89	0.7600	1.697	0.940	0.053	0.024	0.16974
13333.33	0.7500	1.693	0.929	0.052	0.024	0.16744
13513.51	0.7400	1.689	0.919	0.052	0.024	0.16523
13698.63	0.7300	1.684	0.909	0.051	0.024	0.16301
13888.89	0.7200	1.680	0.898	0.051	0.024	0.16075
14084.51	0.7100	1.675	0.888	0.050	0.024	0.15846
14285.71	0.7000	1.670	0.877	0.049	0.024	0.15617
14492.75	0.6900	1.666	0.866	0.049	0.024	0.15381
14705.88	0.6800	1.661	0.855	0.048	0.024	0.15142
14925.37	0.6700	1.657	0.844	0.047	0.024	0.14905
15151.52	0.6600	1.653	0.832	0.047	0.024	0.14660
15384.62	0.6500	1.651	0.822	0.046	0.024	0.14450
15625.00	0.6400	1.646	0.814	0.045	0.023	0.14258
15873.02	0.6300	1.640	0.800	0.045	0.023	0.13972
16129.03	0.6200	1.637	0.788	0.044	0.023	0.13726
16393.44	0.6100	1.634	0.777	0.043	0.023	0.13499
16666.67	0.6000	1.630	0.765	0.042	0.023	0.13271
16949.15	0.5900	1.627	0.754	0.042	0.023	0.13044
17241.38	0.5800	1.624	0.743	0.041	0.023	0.12821
17543.86	0.5700	1.622	0.732	0.040	0.023	0.12615
17857.14	0.5600	1.618	0.721	0.040	0.023	0.12402
18181.82	0.5500	1.615	0.711	0.039	0.023	0.12195
18518.52	0.5400	1.612	0.700	0.038	0.023	0.11990
18867.92	0.5300	1.608	0.690	0.038	0.023	0.11785
19230.77	0.5200	1.605	0.680	0.037	0.023	0.11579
19607.84	0.5100	1.600	0.669	0.036	0.023	0.11368
20000.00	0.5000	1.596	0.659	0.036	0.023	0.11153
20408.16	0.4900	1.591	0.648	0.035	0.022	0.10936
20833.33	0.4800	1.586	0.636	0.034	0.022	0.10695
21276.60	0.4700	1.581	0.623	0.033	0.022	0.10440
21739.13	0.4600	1.577	0.610	0.032	0.022	0.10191
22222.22	0.4500	1.574	0.596	0.032	0.022	0.09949
22727.27	0.4400	1.571	0.583	0.031	0.022	0.09716
23255.81	0.4300	1.568	0.569	0.030	0.022	0.09486
23809.52	0.4200	1.567	0.556	0.029	0.021	0.09267
24390.24	0.4100	1.566	0.542	0.028	0.021	0.09060
25000.00	0.4000	1.565	0.529	0.027	0.021	0.08875
25641.03	0.3900	1.565	0.517	0.026	0.021	0.08692
26315.79	0.3800	1.564	0.504	0.025	0.021	0.08511
27027.03	0.3700	1.565	0.491	0.025	0.021	0.08340
27777.78	0.3600	1.567	0.478	0.024	0.021	0.08187
28571.43	0.3500	1.570	0.465	0.023	0.020	0.08052
29411.76	0.3400	1.577	0.454	0.022	0.020	0.07992
30303.03	0.3300	1.583	0.447	0.021	0.020	0.07972

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WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.589	0.439	0.021	0.020	0.07945
32258.06	0.3100	1.600	0.434	0.020	0.020	0.08005
33333.33	0.3000	1.613	0.436	0.020	0.021	0.08176
34482.76	0.2900	1.626	0.445	0.021	0.021	0.08431
35714.29	0.2800	1.640	0.466	0.022	0.022	0.08842
37037.04	0.2700	1.643	0.511	0.025	0.023	0.09446
38461.54	0.2600	1.607	0.569	0.029	0.023	0.09859
40000.00	0.2500	1.532	0.603	0.033	0.021	0.09687
41666.67	0.2400	1.445	0.601	0.034	0.018	0.08947
43478.26	0.2300	1.361	0.564	0.033	0.015	0.07743
45454.55	0.2200	1.293	0.503	0.030	0.012	0.06249
47619.05	0.2100	1.248	0.411	0.024	0.011	0.04501
45454.50	0.2200	0.922	1.909	0.087	0.093	0.50000

### 5.12 TCNQ Salts

The measured reflectance spectra and computed spectral values of  $n$  and  $k$  for the 13 mm dia. pellets of the TCNQ salts are presented in the following figures:

TTF-TCNQ	Figs. 105-108,
CuTCNQ	Figs. 110-113, and
LiTCNQ	Figs. 115-118.

The infrared bands for the TCNQ salts are quite evident in the reflectance,  $n$ , and  $k$  spectra. These bands are relatively weak in TTF-TCNQ, of moderate strength in CuTCNQ, and much stronger in LiTCNQ.

Tabulations of the reflectance,  $n$ , and  $k$  are also presented in the following pages.

The first derivative of the infrared reflectance spectra of the TCNQ salts are presented in Figs. 109, 114, and 119. The relative strengths of the bands as noted above is quite obvious when the first derivative spectra are compared.

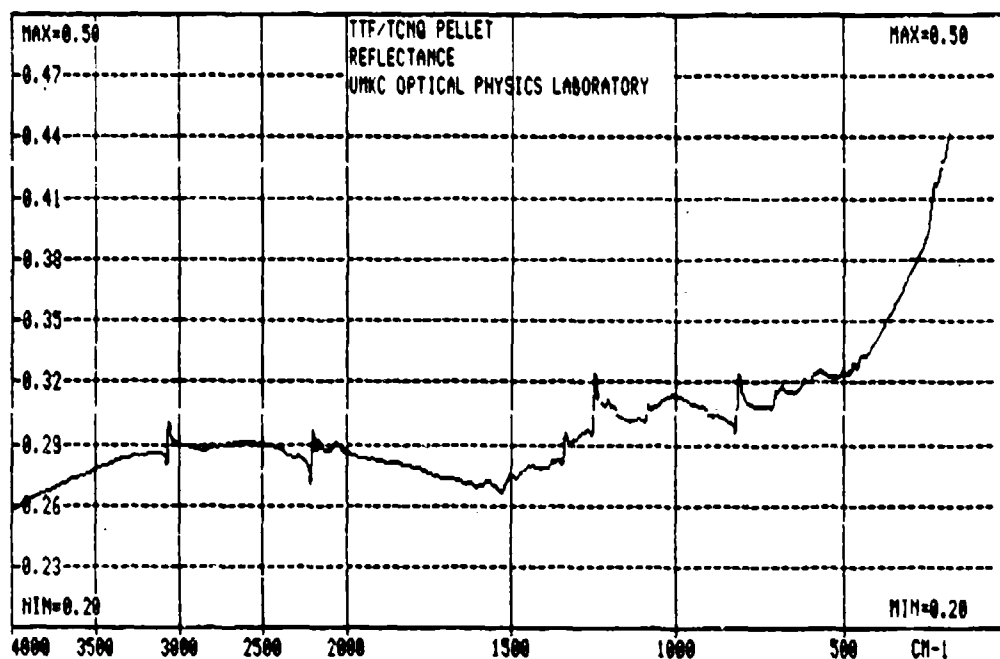


Figure 105. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of the TTF-TCNQ pellet.

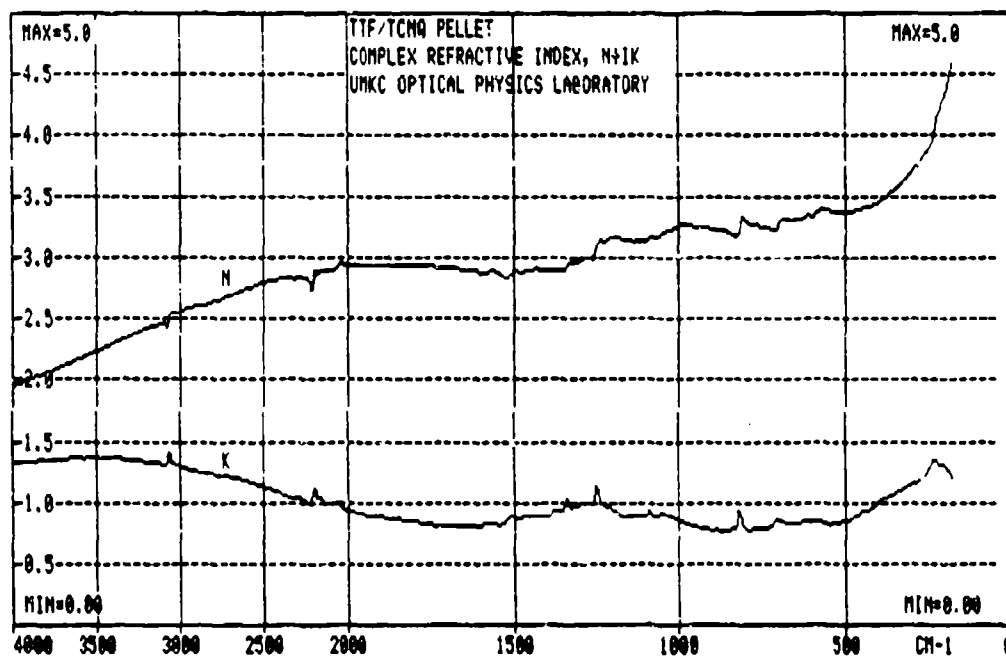


Figure 106. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for the TTF-TCNQ pellet.

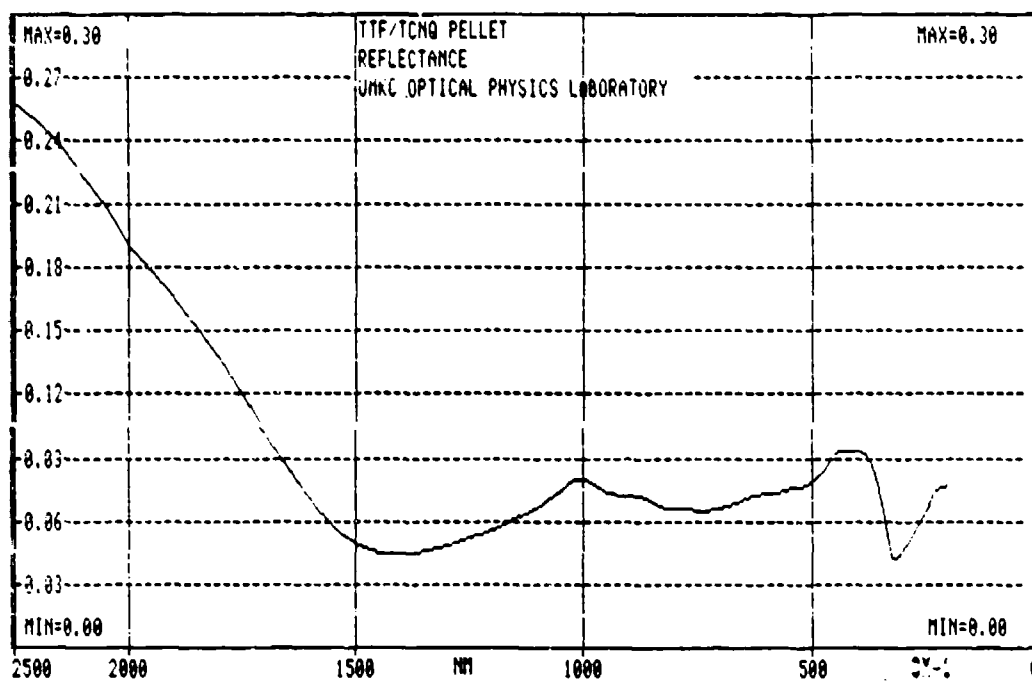


Figure 107. The uv-vis-nir (2,500-200 nm) reflectance spectrum of the TTF-TCNQ pellet.

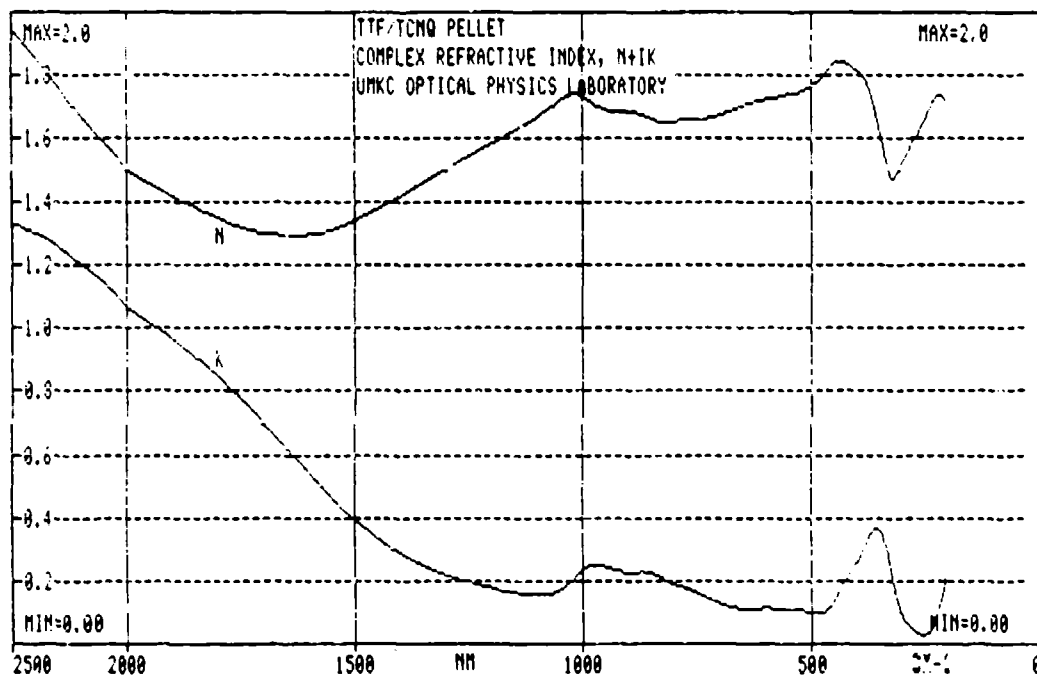


Figure 108. The uv-vis-nir (2,500-210 nm) complex refractive indices  $n$  and  $k$  for the TTF-TCNQ pellet.



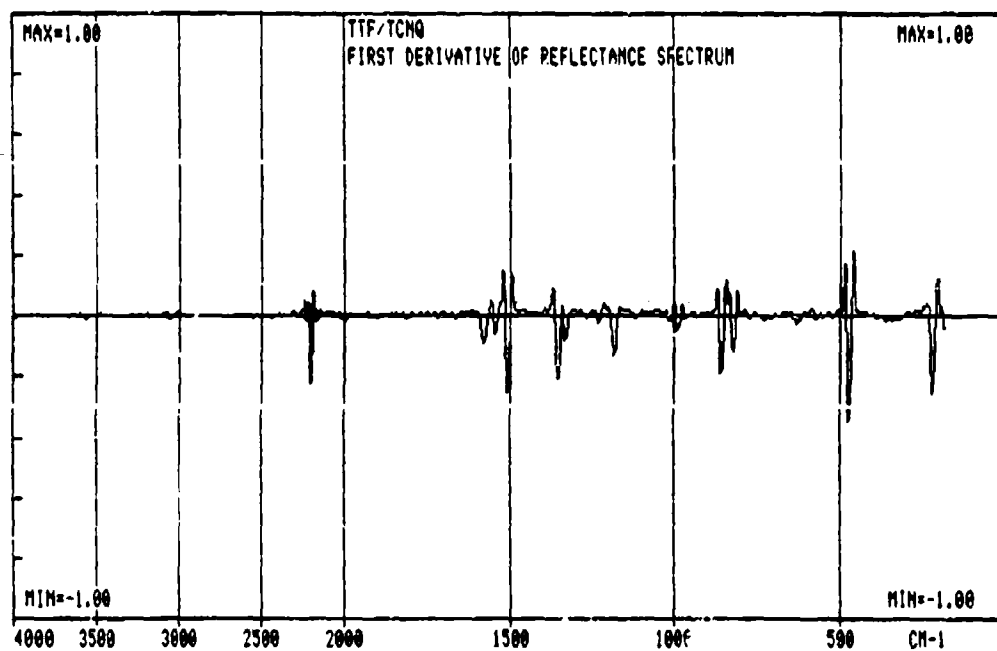


Figure 109. The first derivative of the infrared reflectance spectrum of TTF-TCNQ pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	4.621	1.180	0.062	0.040	0.44200
190.00	52.6316	4.503	1.280	0.052	0.040	0.43803
200.00	50.0000	4.367	1.288	0.049	0.039	0.42891
210.00	47.6190	4.302	1.328	0.048	0.040	0.42630
220.00	45.4545	4.202	1.321	0.046	0.039	0.41881
230.00	43.4783	4.154	1.355	0.045	0.040	0.41728
240.00	41.6667	3.992	1.368	0.042	0.039	0.40635
250.00	40.0000	3.894	1.304	0.040	0.036	0.39514
260.00	38.4615	3.862	1.248	0.039	0.035	0.38922
270.00	37.0370	3.826	1.219	0.039	0.034	0.38463
280.00	35.7143	3.792	1.199	0.038	0.033	0.38075
290.00	34.4828	3.762	1.180	0.037	0.032	0.37717
300.00	33.3333	3.734	1.168	0.037	0.032	0.37411
310.00	32.2581	3.698	1.159	0.036	0.031	0.37054
320.00	31.2500	3.664	1.142	0.035	0.031	0.36666
330.00	30.3030	3.635	1.125	0.035	0.030	0.36317
340.00	29.4118	3.606	1.113	0.034	0.030	0.35991
350.00	28.5714	3.576	1.092	0.034	0.029	0.35597
360.00	27.7778	3.553	1.076	0.033	0.028	0.35304
370.00	27.0270	3.532	1.061	0.033	0.028	0.35023
380.00	26.3158	3.507	1.047	0.032	0.027	0.34706
390.00	25.6410	3.481	1.029	0.032	0.027	0.34358
400.00	25.0000	3.463	1.011	0.031	0.026	0.34084
410.00	24.3902	3.442	0.986	0.031	0.026	0.33732
420.00	23.8095	3.431	0.966	0.031	0.025	0.33504
430.00	23.2558	3.423	0.944	0.030	0.024	0.33292
440.00	22.7273	3.424	0.927	0.030	0.024	0.33196
450.00	22.2222	3.415	0.936	0.030	0.024	0.33161
460.00	21.7391	3.392	0.897	0.030	0.023	0.32712
470.00	21.2766	3.411	0.909	0.030	0.024	0.32961
480.00	20.8333	3.377	0.877	0.029	0.023	0.32446
490.00	20.4082	3.380	0.866	0.029	0.022	0.32405
500.00	20.0000	3.388	0.848	0.029	0.022	0.32384
510.00	19.6078	3.385	0.860	0.029	0.022	0.32421
520.00	19.2308	3.381	0.839	0.029	0.022	0.32258
530.00	18.8679	3.382	0.835	0.029	0.022	0.32248
540.00	18.5185	3.383	0.829	0.029	0.022	0.32227
550.00	18.1818	3.393	0.824	0.029	0.022	0.32297
560.00	17.8571	3.396	0.826	0.029	0.022	0.32331
570.00	17.5439	3.407	0.841	0.029	0.022	0.32523
580.00	17.2414	3.393	0.858	0.029	0.022	0.32494
590.00	16.9492	3.379	0.866	0.029	0.022	0.32396
600.00	16.6667	3.350	0.864	0.029	0.022	0.32101
610.00	16.3934	3.351	0.847	0.029	0.022	0.32011
620.00	16.1290	3.357	0.857	0.029	0.022	0.32133
630.00	15.8730	3.316	0.867	0.028	0.022	0.31789
640.00	15.6250	3.314	0.842	0.028	0.022	0.31619
650.00	15.3846	3.315	0.833	0.028	0.021	0.31568
660.00	15.1515	3.312	0.830	0.028	0.021	0.31522
670.00	14.9254	3.317	0.824	0.028	0.021	0.31538

WN	WL	N	K	IN	IK	R
680.00	14.7059	3.328	0.829	0.028	0.021	0.31684
690.00	14.4928	3.317	0.864	0.028	0.022	0.31779
700.00	14.2857	3.297	0.862	0.028	0.022	0.31574
710.00	14.0845	3.241	0.874	0.027	0.022	0.31089
720.00	13.8889	3.239	0.816	0.027	0.021	0.30706
730.00	13.6986	3.250	0.809	0.027	0.020	0.30774
740.00	13.5135	3.251	0.798	0.027	0.020	0.30720
750.00	13.3333	3.256	0.793	0.027	0.020	0.30743
760.00	13.1579	3.264	0.786	0.027	0.020	0.30778
770.00	12.9870	3.269	0.785	0.027	0.020	0.30822
780.00	12.8205	3.272	0.786	0.027	0.020	0.30856
790.00	12.6582	3.283	0.782	0.027	0.020	0.30951
800.00	12.5000	3.313	0.789	0.028	0.020	0.31301
810.00	12.3457	3.350	0.840	0.029	0.022	0.31960
820.00	12.1951	3.201	0.978	0.027	0.024	0.31408
830.00	12.0482	3.176	0.802	0.026	0.020	0.29972
840.00	11.9048	3.195	0.793	0.026	0.020	0.30108
850.00	11.7647	3.211	0.780	0.026	0.020	0.30197
860.00	11.6279	3.227	0.778	0.026	0.020	0.30348
870.00	11.4943	3.232	0.775	0.026	0.020	0.30382
880.00	11.3636	3.245	0.780	0.027	0.020	0.30557
890.00	11.2360	3.234	0.789	0.027	0.020	0.30490
900.00	11.1111	3.243	0.782	0.027	0.020	0.30542
910.00	10.9890	3.248	0.782	0.027	0.020	0.30593
920.00	10.8696	3.256	0.790	0.027	0.020	0.30726
930.00	10.7527	3.258	0.796	0.027	0.020	0.30777
940.00	10.6383	3.261	0.802	0.027	0.020	0.30844
950.00	10.5263	3.263	0.811	0.027	0.021	0.30912
960.00	10.4167	3.264	0.816	0.027	0.021	0.30956
970.00	10.3093	3.270	0.825	0.027	0.021	0.31066
980.00	10.2041	3.272	0.839	0.027	0.021	0.31182
990.00	10.1010	3.272	0.853	0.027	0.022	0.31268
1000.00	10.0000	3.265	0.868	0.027	0.022	0.31282
1010.00	9.9010	3.259	0.882	0.027	0.022	0.31319
1020.00	9.8039	3.245	0.894	0.027	0.022	0.31262
1030.00	9.7087	3.236	0.907	0.027	0.023	0.31249
1040.00	9.6154	3.218	0.916	0.027	0.023	0.31142
1050.00	9.5238	3.197	0.916	0.027	0.023	0.30929
1060.00	9.4340	3.183	0.911	0.026	0.022	0.30759
1070.00	9.3458	3.183	0.908	0.026	0.022	0.30740
1080.00	9.2593	3.172	0.909	0.026	0.022	0.30638
1090.00	9.1743	3.170	0.945	0.026	0.023	0.30873
1100.00	9.0909	3.137	0.895	0.026	0.022	0.30193
1110.00	9.0090	3.148	0.894	0.026	0.022	0.30222
1120.00	8.9286	3.140	0.902	0.026	0.022	0.30268
1130.00	8.8496	3.147	0.893	0.026	0.022	0.30282
1140.00	8.7719	3.138	0.894	0.026	0.022	0.30198
1150.00	8.6957	3.147	0.889	0.026	0.022	0.30252
1160.00	8.6207	3.153	0.896	0.026	0.022	0.30359
1170.00	8.5470	3.157	0.899	0.026	0.022	0.30422

WN	WL	N	K	DN	DK	R
1180.00	8.4746	3.161	0.908	0.026	0.022	0.30523
1190.00	8.4034	3.171	0.925	0.026	0.023	0.30738
1200.00	8.3333	3.166	0.936	0.026	0.023	0.30768
1210.00	8.2645	3.171	0.981	0.027	0.024	0.31147
1220.00	8.1967	3.145	0.975	0.026	0.023	0.30846
1230.00	8.1301	3.143	0.993	0.026	0.024	0.30964
1240.00	8.0645	3.155	1.008	0.027	0.024	0.31190
1250.00	8.0000	3.082	1.186	0.027	0.027	0.31999
1260.00	7.9365	2.991	1.005	0.024	0.023	0.29596
1270.00	7.8740	3.011	1.008	0.025	0.023	0.29812
1280.00	7.8125	3.002	1.002	0.025	0.023	0.29676
1290.00	7.7519	2.990	1.001	0.024	0.023	0.29543
1300.00	7.6923	2.974	0.993	0.024	0.023	0.29322
1310.00	7.6336	2.973	0.982	0.024	0.023	0.29229
1320.00	7.5758	2.966	0.976	0.024	0.022	0.29108
1330.00	7.5188	2.977	0.974	0.024	0.022	0.29202
1340.00	7.4627	2.917	1.051	0.024	0.023	0.29289
1350.00	7.4074	2.899	0.946	0.023	0.021	0.28180
1360.00	7.3529	2.910	0.941	0.023	0.021	0.28250
1370.00	7.2993	2.912	0.932	0.023	0.021	0.28202
1380.00	7.2464	2.897	0.937	0.023	0.021	0.28092
1390.00	7.1942	2.900	0.908	0.023	0.021	0.27877
1400.00	7.1429	2.905	0.908	0.023	0.021	0.27933
1410.00	7.0922	2.903	0.899	0.023	0.021	0.27838
1420.00	7.0423	2.910	0.894	0.023	0.020	0.27871
1430.00	6.9930	2.916	0.894	0.023	0.020	0.27938
1440.00	6.9444	2.912	0.902	0.023	0.021	0.27948
1450.00	6.8966	2.906	0.908	0.023	0.021	0.27941
1460.00	6.8493	2.891	0.903	0.022	0.021	0.27746
1470.00	6.8027	2.886	0.893	0.022	0.020	0.27617
1480.00	6.7568	2.880	0.883	0.022	0.020	0.27466
1490.00	6.7114	2.889	0.874	0.022	0.020	0.27488
1500.00	6.6667	2.903	0.893	0.022	0.020	0.27785
1510.00	6.6225	2.851	0.891	0.022	0.020	0.27234
1520.00	6.5789	2.838	0.873	0.022	0.020	0.26954
1530.00	6.5359	2.850	0.832	0.021	0.019	0.26743
1540.00	6.4935	2.871	0.823	0.022	0.019	0.26892
1550.00	6.4516	2.883	0.824	0.022	0.019	0.27037
1560.00	6.4103	2.896	0.832	0.022	0.019	0.27232
1570.00	6.3694	2.891	0.843	0.022	0.019	0.27266
1580.00	6.3291	2.878	0.838	0.022	0.019	0.27085
1590.00	6.2893	2.879	0.826	0.022	0.019	0.27002
1600.00	6.2500	2.880	0.819	0.022	0.019	0.26966
1610.00	6.2112	2.894	0.808	0.022	0.019	0.27029
1620.00	6.1728	2.903	0.820	0.022	0.019	0.27222
1630.00	6.1350	2.898	0.815	0.022	0.019	0.27126
1640.00	6.0976	2.904	0.815	0.022	0.019	0.27192
1650.00	6.0606	2.910	0.813	0.022	0.019	0.27241
1660.00	6.0241	2.910	0.819	0.022	0.019	0.27281
1670.00	5.9880	2.916	0.819	0.022	0.019	0.27349

WN	WL	N	K	DN	DK	R
1680.00	5.9524	2.915	0.820	0.022	0.019	0.27347
1690.00	5.9172	2.915	0.822	0.022	0.019	0.27361
1700.00	5.8824	2.920	0.819	0.022	0.019	0.27394
1710.00	5.8480	2.919	0.817	0.022	0.019	0.27363
1720.00	5.8140	2.931	0.818	0.022	0.019	0.27509
1730.00	5.7803	2.931	0.822	0.022	0.019	0.27525
1740.00	5.7471	2.939	0.821	0.023	0.019	0.27610
1750.00	5.7143	2.943	0.829	0.023	0.019	0.27706
1760.00	5.6818	2.946	0.834	0.023	0.019	0.27786
1770.00	5.6497	2.947	0.840	0.023	0.020	0.27836
1780.00	5.6180	2.948	0.847	0.023	0.020	0.27897
1790.00	5.5866	2.946	0.849	0.023	0.020	0.27885
1800.00	5.5556	2.949	0.853	0.023	0.020	0.27957
1810.00	5.5249	2.950	0.857	0.023	0.020	0.27992
1820.00	5.4945	2.950	0.861	0.023	0.020	0.28024
1830.00	5.4645	2.951	0.867	0.023	0.020	0.28086
1840.00	5.4348	2.949	0.873	0.023	0.020	0.28105
1850.00	5.4054	2.947	0.875	0.023	0.020	0.28104
1860.00	5.3763	2.949	0.881	0.023	0.020	0.28177
1870.00	5.3476	2.946	0.881	0.023	0.020	0.28141
1880.00	5.3191	2.947	0.885	0.023	0.021	0.28180
1890.00	5.2910	2.948	0.890	0.023	0.021	0.28233
1900.00	5.2632	2.947	0.891	0.023	0.021	0.28223
1910.00	5.2356	2.950	0.896	0.023	0.021	0.28290
1920.00	5.2083	2.953	0.906	0.023	0.021	0.28409
1930.00	5.1813	2.940	0.907	0.023	0.021	0.28285
1940.00	5.1546	2.947	0.909	0.023	0.021	0.28361
1950.00	5.1282	2.945	0.914	0.023	0.021	0.28388
1960.00	5.1020	2.949	0.917	0.023	0.021	0.28454
1970.00	5.0761	2.948	0.922	0.023	0.021	0.28482
1980.00	5.0505	2.952	0.928	0.023	0.021	0.28574
1990.00	5.0251	2.951	0.935	0.023	0.021	0.28620
2000.00	5.0000	2.950	0.939	0.023	0.022	0.28641
2010.00	4.9751	2.949	0.947	0.023	0.022	0.28698
2020.00	4.9505	2.956	0.954	0.024	0.022	0.28827
2030.00	4.9261	2.948	0.962	0.024	0.022	0.28818
2040.00	4.9020	2.957	0.974	0.024	0.022	0.29001
2050.00	4.8780	2.951	0.986	0.024	0.022	0.29038
2060.00	4.8544	2.942	1.003	0.024	0.023	0.29107
2070.00	4.8309	2.926	1.013	0.024	0.023	0.29026
2080.00	4.8077	2.912	1.008	0.023	0.023	0.28857
2090.00	4.7847	2.910	1.006	0.023	0.023	0.28814
2100.00	4.7619	2.902	1.006	0.023	0.022	0.28733
2110.00	4.7393	2.902	1.007	0.023	0.023	0.28748
2120.00	4.7170	2.902	1.009	0.023	0.023	0.28766
2130.00	4.6948	2.902	1.011	0.023	0.023	0.28779
2140.00	4.6729	2.902	1.015	0.023	0.023	0.28821
2150.00	4.6512	2.905	1.024	0.023	0.023	0.28929
2160.00	4.6296	2.913	1.046	0.024	0.023	0.29203
2170.00	4.6083	2.875	1.048	0.023	0.023	0.28867

WN	WL	N	K	DN	DK	R
2180.00	4.5872	2.895	1.066	0.024	0.023	0.29215
2190.00	4.5662	2.870	1.047	0.023	0.023	0.28802
2200.00	4.5455	2.924	1.150	0.025	0.025	0.30279
2210.00	4.5249	2.696	1.065	0.021	0.022	0.27327
2220.00	4.5045	2.801	0.997	0.022	0.022	0.27672
2230.00	4.4843	2.829	1.006	0.022	0.022	0.28027
2240.00	4.4643	2.837	1.014	0.023	0.022	0.28179
2250.00	4.4444	2.840	1.019	0.023	0.022	0.28252
2260.00	4.4248	2.843	1.023	0.023	0.022	0.28319
2270.00	4.4053	2.847	1.033	0.023	0.023	0.28460
2280.00	4.3860	2.843	1.040	0.023	0.023	0.28484
2290.00	4.3668	2.839	1.044	0.023	0.023	0.28476
2300.00	4.3478	2.834	1.046	0.023	0.023	0.28452
2310.00	4.3290	2.833	1.047	0.023	0.023	0.28443
2320.00	4.3103	2.829	1.041	0.023	0.023	0.28356
2330.00	4.2918	2.838	1.046	0.023	0.023	0.28487
2340.00	4.2735	2.838	1.051	0.023	0.023	0.28532
2350.00	4.2553	2.838	1.055	0.023	0.023	0.28572
2360.00	4.2373	2.837	1.057	0.023	0.023	0.28584
2370.00	4.2194	2.842	1.063	0.023	0.023	0.28684
2380.00	4.2017	2.840	1.071	0.023	0.023	0.28744
2390.00	4.1841	2.840	1.081	0.023	0.023	0.28844
2400.00	4.1667	2.838	1.086	0.023	0.023	0.28869
2410.00	4.1494	2.836	1.098	0.023	0.024	0.28968
2420.00	4.1322	2.828	1.099	0.023	0.024	0.28914
2430.00	4.1152	2.828	1.107	0.023	0.024	0.28991
2440.00	4.0984	2.824	1.111	0.023	0.024	0.28994
2450.00	4.0816	2.814	1.117	0.023	0.024	0.28959
2460.00	4.0650	2.815	1.123	0.023	0.024	0.29033
2470.00	4.0486	2.811	1.125	0.023	0.024	0.29022
2480.00	4.0323	2.806	1.131	0.023	0.024	0.29028
2490.00	4.0161	2.804	1.140	0.023	0.024	0.29105
2500.00	4.0000	2.793	1.144	0.023	0.024	0.29049
2510.00	3.9841	2.796	1.148	0.023	0.024	0.29116
2520.00	3.9683	2.786	1.153	0.023	0.024	0.29076
2530.00	3.9526	2.783	1.154	0.023	0.024	0.29069
2540.00	3.9370	2.781	1.158	0.023	0.024	0.29091
2550.00	3.9216	2.775	1.168	0.023	0.024	0.29138
2560.00	3.9063	2.768	1.169	0.023	0.024	0.29098
2570.00	3.8911	2.769	1.178	0.023	0.024	0.29193
2580.00	3.8760	2.758	1.178	0.023	0.024	0.29101
2590.00	3.8610	2.756	1.186	0.023	0.024	0.29166
2600.00	3.8462	2.750	1.188	0.023	0.024	0.29144
2610.00	3.8314	2.743	1.188	0.023	0.024	0.29082
2620.00	3.8168	2.738	1.194	0.023	0.024	0.29107
2630.00	3.8023	2.737	1.197	0.023	0.024	0.29137
2640.00	3.7879	2.729	1.206	0.023	0.024	0.29161
2650.00	3.7736	2.723	1.203	0.022	0.024	0.29067
2660.00	3.7594	2.719	1.210	0.023	0.024	0.29117
2670.00	3.7453	2.712	1.218	0.022	0.024	0.29153

WN	WL	N	K	DN	DK	R
2680.00	3.7313	2.704	1.217	0.022	0.024	0.29076
2690.00	3.7175	2.703	1.215	0.022	0.024	0.29043
2700.00	3.7037	2.698	1.222	0.022	0.024	0.29081
2710.00	3.6900	2.690	1.227	0.022	0.024	0.29069
2720.00	3.6765	2.681	1.228	0.022	0.024	0.29008
2730.00	3.6630	2.680	1.227	0.022	0.024	0.28981
2740.00	3.6496	2.677	1.236	0.022	0.024	0.29071
2750.00	3.6364	2.670	1.235	0.022	0.024	0.29001
2760.00	3.6232	2.661	1.237	0.022	0.024	0.28956
2770.00	3.6101	2.659	1.238	0.022	0.024	0.28945
2780.00	3.5971	2.657	1.244	0.022	0.024	0.29001
2790.00	3.5842	2.648	1.247	0.022	0.024	0.28962
2800.00	3.5714	2.644	1.249	0.022	0.024	0.28954
2810.00	3.5587	2.638	1.250	0.022	0.024	0.28914
2820.00	3.5461	2.631	1.248	0.022	0.024	0.28842
2830.00	3.5336	2.627	1.252	0.022	0.024	0.28849
2840.00	3.5211	2.623	1.251	0.022	0.024	0.28812
2850.00	3.5088	2.621	1.253	0.022	0.024	0.28814
2860.00	3.4965	2.616	1.255	0.022	0.024	0.28805
2870.00	3.4843	2.613	1.254	0.022	0.024	0.28772
2880.00	3.4722	2.612	1.261	0.022	0.024	0.28857
2890.00	3.4602	2.610	1.263	0.022	0.024	0.28856
2900.00	3.4483	2.603	1.268	0.022	0.024	0.28864
2910.00	3.4364	2.605	1.270	0.022	0.024	0.28900
2920.00	3.4247	2.597	1.277	0.022	0.024	0.28924
2930.00	3.4130	2.594	1.279	0.022	0.024	0.28928
2940.00	3.4014	2.591	1.283	0.022	0.024	0.28954
2950.00	3.3898	2.587	1.289	0.022	0.024	0.29005
2960.00	3.3784	2.581	1.293	0.022	0.024	0.29007
2970.00	3.3670	2.574	1.300	0.022	0.024	0.29046
2980.00	3.3557	2.569	1.299	0.022	0.024	0.28994
2990.00	3.3445	2.568	1.304	0.022	0.024	0.29046
3000.00	3.3333	2.559	1.312	0.022	0.024	0.29093
3010.00	3.3223	2.555	1.313	0.021	0.024	0.29068
3020.00	3.3113	2.552	1.317	0.021	0.024	0.29105
3030.00	3.3003	2.548	1.326	0.022	0.024	0.29187
3040.00	3.2895	2.540	1.331	0.021	0.024	0.29199
3050.00	3.2787	2.543	1.339	0.022	0.024	0.29318
3060.00	3.2680	2.543	1.358	0.022	0.024	0.29571
3070.00	3.2573	2.494	1.460	0.022	0.024	0.30668
3080.00	3.2468	2.409	1.309	0.020	0.022	0.27973
3090.00	3.2362	2.470	1.317	0.021	0.023	0.28505
3100.00	3.2258	2.466	1.322	0.021	0.023	0.28549
3110.00	3.2154	2.467	1.326	0.021	0.023	0.28607
3120.00	3.2051	2.464	1.328	0.021	0.023	0.28614
3130.00	3.1949	2.461	1.331	0.021	0.023	0.28638
3140.00	3.1847	2.456	1.334	0.021	0.023	0.28640
3150.00	3.1746	2.452	1.335	0.021	0.023	0.28634
3160.00	3.1646	2.446	1.341	0.021	0.023	0.28679
3170.00	3.1546	2.438	1.338	0.021	0.023	0.28574

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.436	1.342	0.021	0.023	0.28617
3190.00	3.1348	2.429	1.345	0.020	0.023	0.28625
3200.00	3.1250	2.424	1.346	0.020	0.023	0.28598
3210.00	3.1153	2.418	1.348	0.020	0.023	0.28590
3220.00	3.1056	2.413	1.350	0.020	0.022	0.28585
3230.00	3.0960	2.407	1.353	0.020	0.022	0.28590
3240.00	3.0864	2.400	1.356	0.020	0.022	0.28577
3250.00	3.0769	2.393	1.357	0.020	0.022	0.28548
3260.00	3.0675	2.386	1.358	0.020	0.022	0.28516
3270.00	3.0581	2.381	1.359	0.020	0.022	0.28501
3280.00	3.0488	2.374	1.361	0.020	0.022	0.28488
3290.00	3.0395	2.367	1.362	0.020	0.022	0.28458
3300.00	3.0303	2.361	1.362	0.020	0.022	0.28427
3310.00	3.0211	2.355	1.364	0.020	0.022	0.28406
3320.00	3.0120	2.349	1.365	0.020	0.022	0.28388
3330.00	3.0030	2.342	1.366	0.020	0.022	0.28364
3340.00	2.9940	2.336	1.367	0.020	0.022	0.28342
3350.00	2.9851	2.329	1.368	0.020	0.022	0.28324
3360.00	2.9762	2.322	1.369	0.020	0.021	0.28292
3370.00	2.9674	2.316	1.370	0.020	0.021	0.28258
3380.00	2.9586	2.309	1.370	0.020	0.021	0.28222
3390.00	2.9499	2.302	1.370	0.020	0.021	0.28185
3400.00	2.9412	2.295	1.369	0.019	0.021	0.28135
3410.00	2.9326	2.290	1.369	0.019	0.021	0.28096
3420.00	2.9240	2.285	1.370	0.019	0.021	0.28081
3430.00	2.9155	2.279	1.371	0.019	0.021	0.28064
3440.00	2.9070	2.272	1.372	0.019	0.021	0.28033
3450.00	2.8986	2.266	1.372	0.019	0.021	0.27995
3460.00	2.8902	2.260	1.372	0.019	0.021	0.27965
3470.00	2.8818	2.254	1.372	0.019	0.021	0.27938
3480.00	2.8736	2.247	1.372	0.019	0.020	0.27896
3490.00	2.8653	2.241	1.372	0.019	0.020	0.27859
3500.00	2.8571	2.235	1.371	0.019	0.020	0.27819
3510.00	2.8490	2.229	1.372	0.019	0.020	0.27792
3520.00	2.8409	2.223	1.372	0.019	0.020	0.27756
3530.00	2.8329	2.217	1.372	0.019	0.020	0.27723
3540.00	2.8249	2.211	1.372	0.019	0.020	0.27690
3550.00	2.8169	2.204	1.371	0.019	0.020	0.27645
3560.00	2.8090	2.198	1.370	0.019	0.020	0.27587
3570.00	2.8011	2.193	1.368	0.019	0.020	0.27537
3580.00	2.7933	2.189	1.368	0.019	0.020	0.27516
3590.00	2.7855	2.184	1.369	0.019	0.020	0.27507
3600.00	2.7778	2.178	1.370	0.018	0.019	0.27492
3610.00	2.7701	2.172	1.371	0.018	0.019	0.27471
3620.00	2.7624	2.166	1.371	0.018	0.019	0.27449
3630.00	2.7548	2.159	1.372	0.018	0.019	0.27421
3640.00	2.7473	2.153	1.372	0.018	0.019	0.27389
3650.00	2.7397	2.146	1.372	0.018	0.019	0.27355
3660.00	2.7322	2.138	1.371	0.018	0.019	0.27297
3670.00	2.7248	2.132	1.368	0.018	0.019	0.27225



WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.127	1.366	0.018	0.019	0.27171
3690.00	2.7100	2.122	1.366	0.018	0.019	0.27147
3700.00	2.7027	2.116	1.367	0.018	0.019	0.27125
3710.00	2.6954	2.110	1.366	0.018	0.018	0.27085
3720.00	2.6882	2.103	1.365	0.018	0.018	0.27035
3730.00	2.6810	2.097	1.364	0.018	0.018	0.26980
3740.00	2.6738	2.092	1.362	0.018	0.018	0.26934
3750.00	2.6667	2.087	1.361	0.018	0.018	0.26892
3760.00	2.6596	2.081	1.361	0.018	0.018	0.26853
3770.00	2.6525	2.076	1.360	0.018	0.018	0.26813
3780.00	2.6455	2.070	1.359	0.018	0.018	0.26777
3790.00	2.6385	2.065	1.358	0.017	0.018	0.26740
3800.00	2.6316	2.059	1.358	0.017	0.018	0.26708
3810.00	2.6247	2.053	1.357	0.017	0.018	0.26665
3820.00	2.6178	2.047	1.356	0.017	0.018	0.26622
3830.00	2.6110	2.041	1.356	0.017	0.017	0.26584
3840.00	2.6042	2.035	1.355	0.017	0.017	0.26540
3850.00	2.5974	2.029	1.353	0.017	0.017	0.26486
3860.00	2.5907	2.024	1.352	0.017	0.017	0.26439
3870.00	2.5840	2.018	1.351	0.017	0.017	0.26405
3880.00	2.5773	2.012	1.350	0.017	0.017	0.26355
3890.00	2.5707	2.006	1.348	0.017	0.017	0.26296
3900.00	2.5641	2.002	1.346	0.017	0.017	0.26242
3910.00	2.5575	1.997	1.345	0.017	0.017	0.26211
3920.00	2.5510	1.991	1.345	0.017	0.017	0.26180
3930.00	2.5445	1.985	1.344	0.017	0.017	0.26129
3940.00	2.5381	1.979	1.341	0.017	0.016	0.26070
3950.00	2.5316	1.974	1.340	0.017	0.016	0.26023
3960.00	2.5253	1.969	1.339	0.017	0.016	0.25980
3970.00	2.5189	1.963	1.338	0.017	0.016	0.25935
3980.00	2.5126	1.957	1.336	0.017	0.016	0.25885
3990.00	2.5063	1.952	1.335	0.017	0.016	0.25842
4000.00	2.5000	1.946	1.334	0.016	0.016	0.25808
4016.06	2.4900	1.937	1.331	0.016	0.016	0.25711
4032.26	2.4800	1.928	1.328	0.016	0.016	0.25620
4048.58	2.4700	1.919	1.325	0.016	0.015	0.25532
4065.04	2.4600	1.910	1.322	0.016	0.015	0.25440
4081.63	2.4500	1.901	1.318	0.016	0.015	0.25340
4098.36	2.4400	1.893	1.315	0.016	0.015	0.25245
4115.23	2.4300	1.885	1.312	0.016	0.015	0.25165
4132.23	2.4200	1.876	1.309	0.016	0.015	0.25077
4149.38	2.4100	1.867	1.306	0.016	0.015	0.24980
4166.67	2.4000	1.858	1.302	0.016	0.014	0.24875
4184.10	2.3900	1.849	1.298	0.016	0.014	0.24780
4201.68	2.3800	1.841	1.295	0.015	0.014	0.24685
4219.41	2.3700	1.832	1.291	0.015	0.014	0.24583
4237.29	2.3600	1.823	1.288	0.015	0.014	0.24485
4255.32	2.3500	1.814	1.284	0.015	0.014	0.24377
4273.50	2.3400	1.805	1.279	0.015	0.014	0.24266
4291.85	2.3300	1.796	1.275	0.015	0.013	0.24153

WN	WL	N	K	IN	IK	R
4310.34	2.3200	1.787	1.271	0.015	0.013	0.24042
4329.00	2.3100	1.778	1.267	0.015	0.013	0.23933
4347.83	2.3000	1.769	1.262	0.015	0.013	0.23811
4366.81	2.2900	1.760	1.257	0.015	0.013	0.23693
4385.96	2.2800	1.751	1.253	0.015	0.013	0.23576
4405.29	2.2700	1.742	1.248	0.015	0.013	0.23447
4424.78	2.2600	1.733	1.243	0.014	0.012	0.23318
4444.44	2.2500	1.724	1.237	0.014	0.012	0.23176
4464.29	2.2400	1.715	1.231	0.014	0.012	0.23039
4484.30	2.2300	1.706	1.226	0.014	0.012	0.22904
4504.50	2.2200	1.698	1.221	0.014	0.012	0.22770
4524.89	2.2100	1.689	1.215	0.014	0.012	0.22640
4545.45	2.2000	1.680	1.209	0.014	0.011	0.22490
4566.21	2.1900	1.671	1.203	0.014	0.011	0.22345
4587.16	2.1800	1.662	1.198	0.014	0.011	0.22200
4608.29	2.1700	1.654	1.192	0.014	0.011	0.22058
4629.63	2.1600	1.645	1.186	0.014	0.011	0.21917
4651.16	2.1500	1.636	1.180	0.014	0.011	0.21764
4672.90	2.1400	1.627	1.173	0.013	0.011	0.21599
4694.84	2.1300	1.618	1.166	0.013	0.010	0.21435
4716.98	2.1200	1.609	1.160	0.013	0.010	0.21277
4739.34	2.1100	1.600	1.153	0.013	0.010	0.21112
4761.90	2.1000	1.591	1.146	0.013	0.010	0.20941
4784.69	2.0900	1.583	1.139	0.013	0.010	0.20765
4807.69	2.0800	1.574	1.132	0.013	0.010	0.20594
4830.92	2.0700	1.565	1.125	0.013	0.010	0.20418
4854.37	2.0600	1.556	1.117	0.013	0.009	0.20230
4878.05	2.0500	1.547	1.109	0.013	0.009	0.20035
4901.96	2.0400	1.538	1.101	0.013	0.009	0.19840
4926.11	2.0300	1.529	1.093	0.012	0.009	0.19641
4950.50	2.0200	1.520	1.085	0.012	0.009	0.19440
4975.12	2.0100	1.512	1.076	0.012	0.009	0.19230
5000.00	2.0000	1.503	1.067	0.012	0.009	0.19003
5025.13	1.9900	1.495	1.057	0.012	0.008	0.18773
5050.51	1.9800	1.486	1.048	0.012	0.008	0.18560
5076.14	1.9700	1.478	1.039	0.012	0.008	0.18328
5102.04	1.9600	1.470	1.029	0.012	0.008	0.18095
5128.21	1.9500	1.462	1.020	0.012	0.008	0.17862
5154.64	1.9400	1.454	1.010	0.012	0.008	0.17625
5181.35	1.9300	1.446	1.000	0.011	0.008	0.17370
5208.33	1.9200	1.438	0.990	0.011	0.008	0.17124
5235.60	1.9100	1.430	0.979	0.011	0.007	0.16863
5263.16	1.9000	1.422	0.968	0.011	0.007	0.16597
5291.01	1.8900	1.415	0.957	0.011	0.007	0.16333
5319.15	1.8800	1.407	0.946	0.011	0.007	0.16049
5347.59	1.8700	1.400	0.934	0.011	0.007	0.15754
5376.34	1.8600	1.394	0.923	0.011	0.007	0.15485
5405.41	1.8500	1.388	0.912	0.011	0.007	0.15235
5434.78	1.8400	1.379	0.901	0.010	0.007	0.14955
5464.48	1.8300	1.372	0.888	0.010	0.007	0.14645

WN	WL	N	K	DN	DK	R
5494.51	1.8200	1.366	0.875	0.010	0.006	0.14323
5524.86	1.8100	1.360	0.862	0.010	0.006	0.14015
5555.56	1.8000	1.354	0.850	0.010	0.006	0.13727
5586.59	1.7900	1.348	0.838	0.010	0.006	0.13426
5617.98	1.7800	1.341	0.824	0.010	0.006	0.13103
5649.72	1.7700	1.335	0.810	0.010	0.006	0.12767
5681.82	1.7600	1.330	0.796	0.009	0.006	0.12430
5714.29	1.7500	1.325	0.782	0.009	0.006	0.12095
5747.13	1.7400	1.320	0.768	0.009	0.006	0.11755
5780.35	1.7300	1.316	0.753	0.009	0.006	0.11415
5813.95	1.7200	1.312	0.738	0.009	0.006	0.11072
5847.95	1.7100	1.308	0.723	0.009	0.006	0.10720
5882.35	1.7000	1.305	0.708	0.009	0.006	0.10371
5917.16	1.6900	1.302	0.692	0.008	0.006	0.10025
5952.38	1.6800	1.299	0.677	0.008	0.005	0.09678
5988.02	1.6700	1.297	0.661	0.008	0.005	0.09335
6024.10	1.6600	1.296	0.645	0.008	0.005	0.08994
6060.61	1.6500	1.295	0.629	0.008	0.005	0.08664
6097.56	1.6400	1.294	0.613	0.008	0.005	0.08337
6134.97	1.6300	1.294	0.597	0.008	0.005	0.08015
6172.84	1.6200	1.295	0.581	0.007	0.005	0.07705
6211.18	1.6100	1.296	0.565	0.007	0.005	0.07395
6250.00	1.6000	1.297	0.549	0.007	0.005	0.07103
6289.31	1.5900	1.299	0.532	0.007	0.005	0.06810
6329.11	1.5800	1.303	0.516	0.007	0.005	0.06537
6369.43	1.5700	1.306	0.501	0.007	0.005	0.06307
6410.26	1.5600	1.310	0.486	0.006	0.005	0.06074
6451.61	1.5500	1.313	0.471	0.006	0.005	0.05850
6493.51	1.5400	1.318	0.455	0.006	0.005	0.05621
6535.95	1.5300	1.325	0.440	0.006	0.005	0.05430
6578.95	1.5200	1.331	0.427	0.006	0.005	0.05294
6622.52	1.5100	1.337	0.414	0.006	0.005	0.05151
6666.67	1.5000	1.343	0.401	0.005	0.005	0.05012
6711.41	1.4900	1.350	0.388	0.005	0.005	0.04890
6756.76	1.4800	1.357	0.375	0.005	0.005	0.04794
6802.72	1.4700	1.365	0.364	0.005	0.005	0.04715
6849.32	1.4600	1.372	0.352	0.005	0.005	0.04646
6896.55	1.4500	1.379	0.341	0.005	0.005	0.04585
6944.44	1.4400	1.388	0.330	0.005	0.005	0.04543
6993.01	1.4300	1.396	0.320	0.005	0.005	0.04511
7042.25	1.4200	1.404	0.310	0.005	0.005	0.04493
7092.20	1.4100	1.412	0.301	0.004	0.004	0.04490
7142.86	1.4000	1.421	0.292	0.004	0.004	0.04490
7194.24	1.3900	1.429	0.284	0.004	0.004	0.04500
7246.38	1.3800	1.437	0.276	0.004	0.004	0.04518
7299.27	1.3700	1.446	0.268	0.004	0.004	0.04543
7352.94	1.3600	1.454	0.260	0.004	0.004	0.04578
7407.41	1.3500	1.463	0.253	0.004	0.004	0.04620
7462.69	1.3400	1.471	0.247	0.004	0.004	0.04665
7518.80	1.3300	1.479	0.240	0.004	0.004	0.04712

WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.488	0.234	0.004	0.004	0.04769
7633.59	1.3100	1.495	0.228	0.004	0.004	0.04820
7692.31	1.3000	1.504	0.222	0.004	0.004	0.04878
7751.94	1.2900	1.512	0.217	0.004	0.004	0.04951
7812.50	1.2800	1.521	0.212	0.004	0.004	0.05023
7874.02	1.2700	1.529	0.207	0.004	0.004	0.05092
7936.51	1.2600	1.536	0.203	0.004	0.003	0.05166
8000.00	1.2500	1.544	0.199	0.004	0.003	0.05239
8064.52	1.2400	1.552	0.194	0.004	0.003	0.05316
8130.08	1.2300	1.560	0.191	0.004	0.003	0.05399
8196.72	1.2200	1.568	0.187	0.004	0.003	0.05480
8264.46	1.2100	1.576	0.183	0.004	0.003	0.05567
8333.33	1.2000	1.583	0.181	0.004	0.003	0.05643
8403.36	1.1900	1.590	0.176	0.004	0.003	0.05715
8474.58	1.1800	1.599	0.172	0.004	0.003	0.05815
8547.01	1.1700	1.608	0.169	0.005	0.003	0.05920
8620.69	1.1600	1.616	0.167	0.005	0.003	0.06025
8695.65	1.1500	1.625	0.165	0.005	0.003	0.06132
8771.93	1.1400	1.633	0.164	0.005	0.003	0.06240
8849.56	1.1300	1.641	0.162	0.005	0.003	0.06340
8928.57	1.1200	1.649	0.160	0.005	0.003	0.06442
9009.01	1.1100	1.659	0.158	0.005	0.003	0.06569
9090.91	1.1000	1.669	0.158	0.005	0.003	0.06710
9174.31	1.0900	1.680	0.158	0.005	0.003	0.06865
9259.26	1.0800	1.691	0.160	0.005	0.003	0.07024
9345.79	1.0700	1.701	0.163	0.005	0.003	0.07184
9433.96	1.0600	1.713	0.168	0.005	0.003	0.07367
9523.81	1.0500	1.724	0.175	0.005	0.003	0.07552
9615.38	1.0400	1.733	0.185	0.006	0.003	0.07732
9708.74	1.0300	1.740	0.198	0.006	0.004	0.07894
9803.92	1.0200	1.743	0.213	0.006	0.004	0.08010
9900.99	1.0100	1.741	0.227	0.006	0.004	0.08062
10000.00	1.0000	1.735	0.240	0.006	0.004	0.08040
10101.01	0.9900	1.725	0.248	0.006	0.005	0.07965
10204.08	0.9800	1.715	0.253	0.006	0.005	0.07846
10309.28	0.9700	1.705	0.253	0.006	0.005	0.07714
10416.67	0.9600	1.696	0.251	0.006	0.004	0.07582
10526.32	0.9500	1.690	0.247	0.006	0.004	0.07467
10638.30	0.9400	1.686	0.242	0.006	0.004	0.07381
10752.69	0.9300	1.684	0.237	0.006	0.004	0.07330
10869.57	0.9200	1.684	0.234	0.005	0.004	0.07304
10989.01	0.9100	1.684	0.231	0.005	0.004	0.07295
11111.11	0.9000	1.685	0.231	0.005	0.004	0.07299
11235.96	0.8900	1.683	0.232	0.005	0.004	0.07285
11363.64	0.8800	1.680	0.232	0.005	0.004	0.07249
11494.25	0.8700	1.676	0.233	0.005	0.004	0.07194
11627.91	0.8600	1.669	0.231	0.005	0.004	0.07092
11764.71	0.8500	1.663	0.227	0.005	0.004	0.06981
11904.76	0.8400	1.657	0.221	0.005	0.004	0.06863
12048.19	0.8300	1.653	0.212	0.005	0.004	0.06762

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.652	0.203	0.005	0.004	0.06691
12345.68	0.8100	1.653	0.195	0.005	0.004	0.06659
12500.00	0.8000	1.655	0.188	0.005	0.003	0.06658
12658.23	0.7900	1.657	0.184	0.005	0.003	0.06668
12820.51	0.7800	1.657	0.180	0.005	0.003	0.06649
12987.01	0.7700	1.657	0.175	0.005	0.003	0.06624
13157.89	0.7600	1.658	0.169	0.005	0.003	0.06602
13333.33	0.7500	1.658	0.162	0.005	0.003	0.06583
13513.51	0.7400	1.660	0.155	0.005	0.003	0.06580
13698.63	0.7300	1.663	0.149	0.005	0.003	0.06591
13888.89	0.7200	1.667	0.142	0.005	0.003	0.06617
14084.51	0.7100	1.671	0.137	0.005	0.003	0.06653
14285.71	0.7000	1.675	0.131	0.005	0.002	0.06700
14492.75	0.6900	1.680	0.127	0.005	0.002	0.06755
14705.88	0.6800	1.686	0.122	0.005	0.002	0.06813
14925.37	0.6700	1.691	0.118	0.005	0.002	0.06876
15151.52	0.6600	1.698	0.114	0.005	0.002	0.06964
15384.62	0.6500	1.707	0.112	0.005	0.002	0.07082
15625.00	0.6400	1.714	0.114	0.005	0.002	0.07186
15873.02	0.6300	1.717	0.115	0.005	0.002	0.07245
16129.03	0.6200	1.721	0.116	0.005	0.002	0.07305
16393.44	0.6100	1.724	0.117	0.005	0.002	0.07347
16666.67	0.6000	1.727	0.117	0.005	0.002	0.07380
16949.15	0.5900	1.729	0.116	0.005	0.002	0.07418
17241.38	0.5800	1.732	0.115	0.005	0.002	0.07452
17543.86	0.5700	1.736	0.114	0.005	0.002	0.07502
17857.14	0.5600	1.740	0.114	0.005	0.002	0.07567
18181.82	0.5500	1.744	0.115	0.005	0.002	0.07621
18518.52	0.5400	1.745	0.115	0.005	0.002	0.07643
18867.92	0.5300	1.747	0.113	0.005	0.002	0.07662
19230.77	0.5200	1.752	0.109	0.005	0.002	0.07720
19607.84	0.5100	1.759	0.106	0.005	0.002	0.07820
20000.00	0.5000	1.767	0.105	0.006	0.002	0.07937
20408.16	0.4900	1.777	0.104	0.006	0.002	0.08076
20833.33	0.4800	1.791	0.104	0.006	0.002	0.08272
21276.60	0.4700	1.809	0.108	0.006	0.002	0.08549
21739.13	0.4600	1.830	0.123	0.006	0.002	0.08895
22222.22	0.4500	1.845	0.149	0.006	0.003	0.09198
22727.27	0.4400	1.848	0.178	0.007	0.003	0.09344
23255.81	0.4300	1.843	0.204	0.007	0.004	0.09382
23809.52	0.4200	1.834	0.228	0.007	0.004	0.09378
24390.24	0.4100	1.824	0.249	0.007	0.005	0.09347
25000.00	0.4000	1.814	0.273	0.007	0.005	0.09352
25641.03	0.3900	1.797	0.304	0.007	0.006	0.09328
26315.79	0.3800	1.765	0.338	0.007	0.006	0.09144
27027.03	0.3700	1.714	0.362	0.007	0.006	0.08682
27777.78	0.3600	1.654	0.369	0.006	0.006	0.07963
28571.43	0.3500	1.587	0.356	0.006	0.006	0.07023
29411.76	0.3400	1.520	0.315	0.005	0.005	0.05823
30303.03	0.3300	1.478	0.241	0.004	0.004	0.04699

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.480	0.163	0.004	0.003	0.04225
32258.06	0.3100	1.507	0.109	0.003	0.002	0.04346
33333.33	0.3000	1.539	0.076	0.004	0.001	0.04675
34482.76	0.2900	1.567	0.057	0.004	0.001	0.05012
35714.29	0.2800	1.594	0.042	0.004	0.001	0.05359
37037.04	0.2700	1.623	0.033	0.004	0.001	0.05740
38461.54	0.2600	1.651	0.030	0.004	0.001	0.06137
40000.00	0.2500	1.684	0.034	0.005	0.001	0.06606
41666.67	0.2400	1.720	0.056	0.005	0.001	0.07156
43478.26	0.2300	1.740	0.103	0.005	0.002	0.07542
45454.55	0.2200	1.735	0.154	0.005	0.003	0.07627
47619.05	0.2100	1.713	0.235	0.006	0.004	0.07716

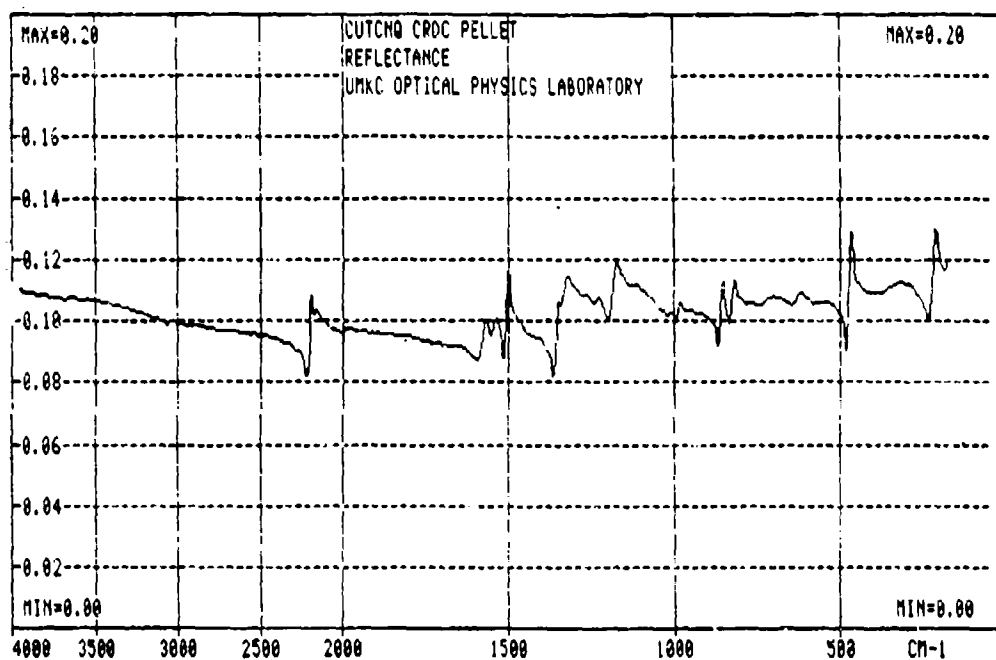


Figure 110. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of the CuTCNQ pellet.

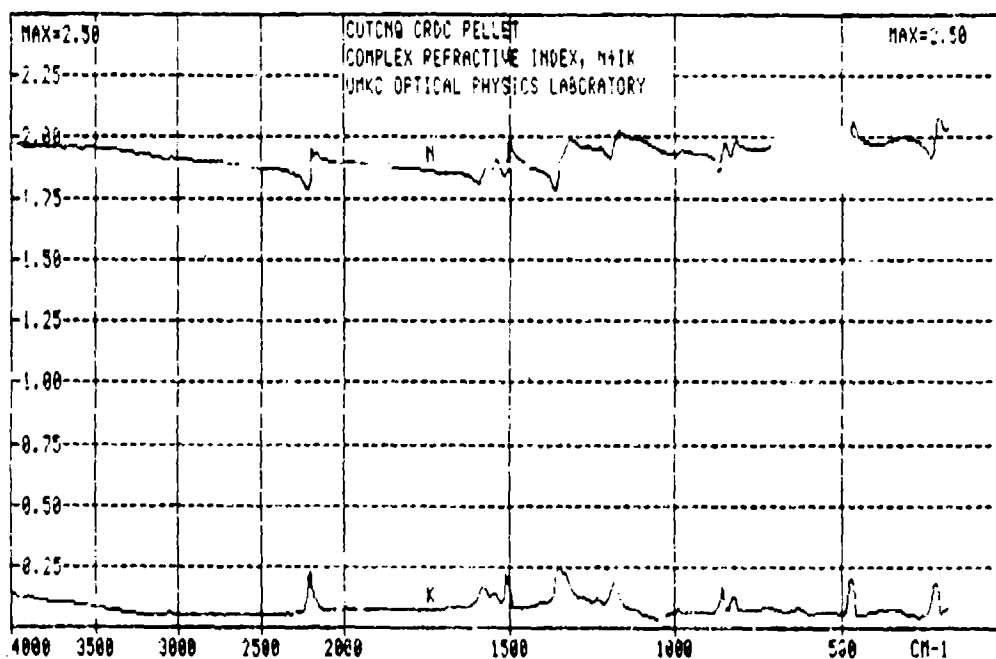


Figure 111. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for the CuTCNQ pellet.

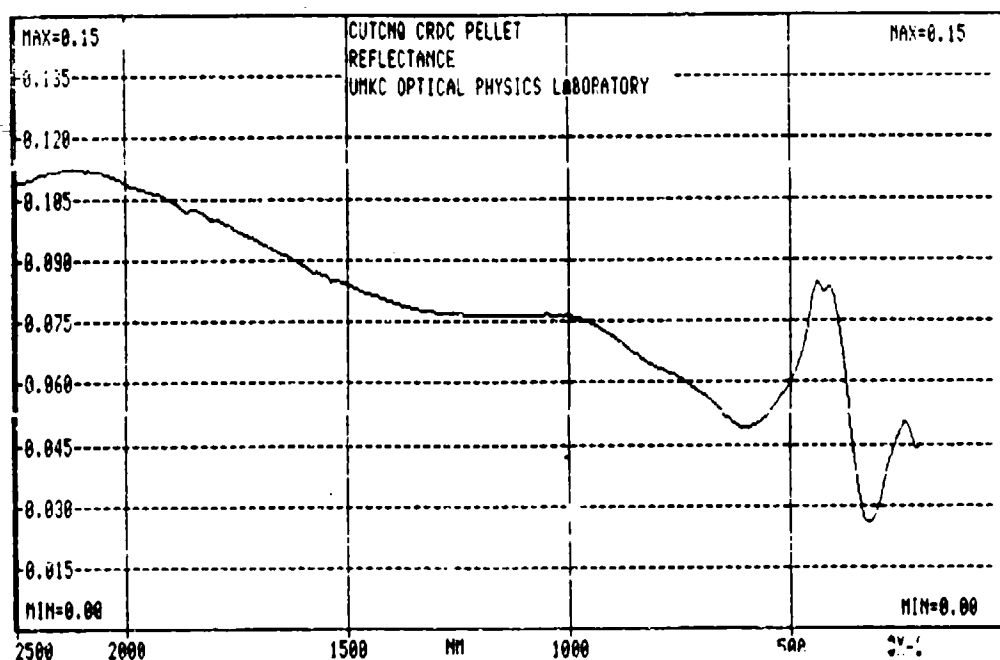


Figure 112. The uv-vis-nir (2,500-200 nm) reflectance spectrum of the CuTCNQ pellet.

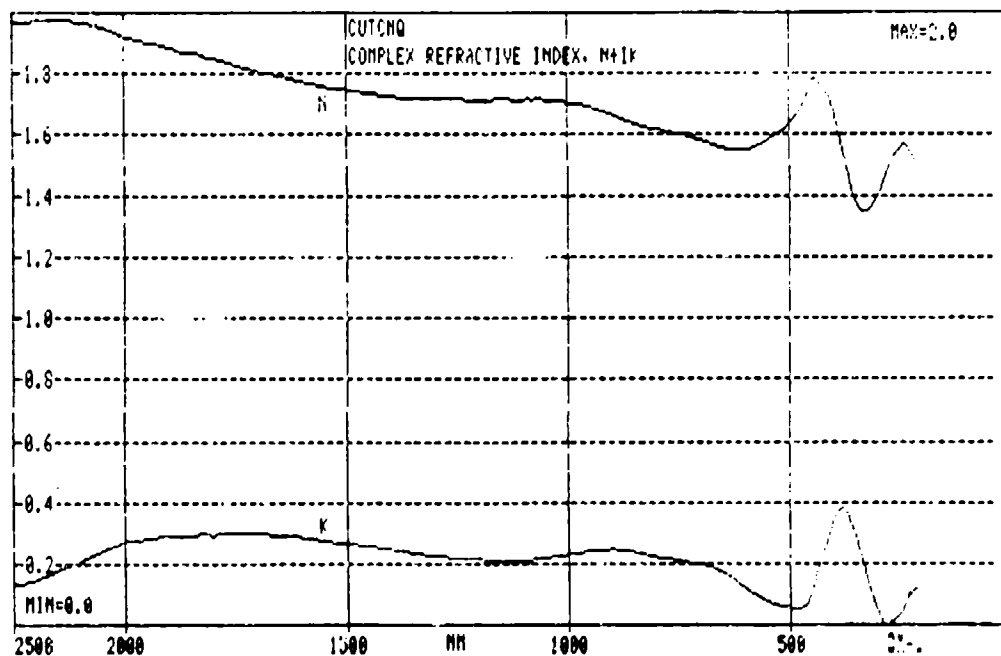


Figure 113. The uv-vis-nir (2,500-210 nm) complex refractive indices  $n$  and  $k$  for the CuTCNQ pellet.



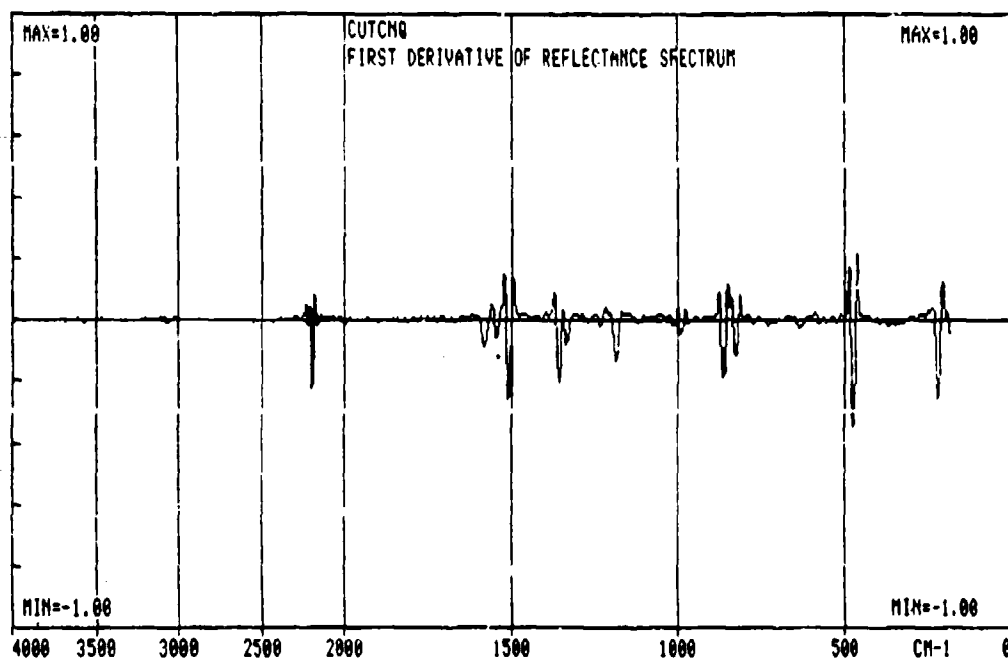


Figure 114. The first derivative of the infrared reflectance spectrum of the CuTCNQ pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	2.048	0.082	0.011	0.002	0.12035
190.00	52.6316	2.024	0.080	0.008	0.002	0.11671
200.00	50.0000	2.035	0.067	0.008	0.001	0.11818
210.00	47.6190	2.084	0.067	0.009	0.001	0.12548
220.00	45.4545	2.068	0.197	0.009	0.004	0.12639
230.00	43.4783	1.923	0.172	0.007	0.003	0.10419
240.00	41.6667	1.923	0.081	0.007	0.002	0.10178
250.00	40.0000	1.949	0.057	0.007	0.001	0.10529
260.00	38.4615	1.967	0.051	0.007	0.001	0.10784
270.00	37.0370	1.977	0.046	0.007	0.001	0.10928
280.00	35.7143	1.988	0.048	0.008	0.001	0.11106
290.00	34.4828	1.992	0.055	0.008	0.001	0.11170
300.00	33.3333	1.994	0.056	0.008	0.001	0.11203
310.00	32.2581	1.999	0.061	0.008	0.001	0.11275
320.00	31.2500	1.999	0.068	0.008	0.001	0.11288
330.00	30.3030	1.995	0.074	0.008	0.001	0.11242
340.00	29.4118	1.990	0.078	0.008	0.002	0.11170
350.00	28.5714	1.986	0.077	0.008	0.002	0.11106
360.00	27.7778	1.981	0.080	0.008	0.002	0.11043
370.00	27.0270	1.974	0.077	0.007	0.002	0.10921
380.00	26.3158	1.974	0.071	0.007	0.001	0.10913
390.00	25.6410	1.974	0.070	0.007	0.001	0.10923
400.00	25.0000	1.974	0.067	0.007	0.001	0.10915
410.00	24.3902	1.975	0.065	0.007	0.001	0.10925
420.00	23.8095	1.976	0.061	0.007	0.001	0.10942
430.00	23.2558	1.983	0.059	0.007	0.001	0.11033
440.00	22.7273	1.991	0.059	0.008	0.001	0.11151
450.00	22.2222	2.001	0.061	0.008	0.001	0.11306
460.00	21.7391	2.033	0.052	0.008	0.001	0.11776
470.00	21.2766	2.072	0.202	0.009	0.004	0.12709
480.00	20.8333	1.870	0.198	0.007	0.004	0.09745
490.00	20.4082	1.900	0.058	0.007	0.001	0.09798
500.00	20.0000	1.930	0.067	0.007	0.001	0.10263
510.00	19.6078	1.940	0.059	0.007	0.001	0.10397
520.00	19.2308	1.950	0.062	0.007	0.001	0.10552
530.00	18.8679	1.951	0.064	0.007	0.001	0.10565
540.00	18.5185	1.954	0.063	0.007	0.001	0.10615
550.00	18.1818	1.956	0.066	0.007	0.001	0.10641
560.00	17.8571	1.955	0.065	0.007	0.001	0.10622
570.00	17.5439	1.955	0.067	0.007	0.001	0.10623
580.00	17.2414	1.950	0.062	0.007	0.001	0.10549
590.00	16.9492	1.960	0.055	0.007	0.001	0.10689
600.00	16.6667	1.966	0.060	0.007	0.001	0.10791
610.00	16.3934	1.973	0.064	0.007	0.001	0.10889
620.00	16.1290	1.973	0.078	0.007	0.002	0.10918
630.00	15.8730	1.960	0.086	0.007	0.002	0.10740
640.00	15.6250	1.949	0.079	0.007	0.002	0.10562
650.00	15.3846	1.951	0.069	0.007	0.001	0.10569
660.00	15.1515	1.955	0.065	0.007	0.001	0.10620
670.00	14.9254	1.960	0.065	0.007	0.001	0.10693

WN	WL	N	K	DN	DK	R
680.00	14.7059	1.965	0.069	0.007	0.001	0.10781
690.00	14.4928	1.966	0.073	0.007	0.001	0.10795
700.00	14.2857	1.967	0.078	0.007	0.002	0.10824
710.00	14.0845	1.962	0.084	0.007	0.002	0.10757
720.00	13.8889	1.959	0.086	0.007	0.002	0.10713
730.00	13.6986	1.950	0.087	0.007	0.002	0.10581
740.00	13.5135	1.947	0.080	0.007	0.002	0.10537
750.00	13.3333	1.947	0.077	0.007	0.002	0.10532
760.00	13.1579	1.951	0.073	0.007	0.001	0.10584
770.00	12.9870	1.954	0.078	0.007	0.002	0.10629
780.00	12.8205	1.949	0.075	0.007	0.002	0.10551
790.00	12.6582	1.956	0.070	0.007	0.001	0.10644
800.00	12.5000	1.964	0.073	0.007	0.001	0.10768
810.00	12.3457	1.970	0.074	0.007	0.001	0.10869
820.00	12.1951	1.990	0.123	0.008	0.002	0.11254
830.00	12.0482	1.919	0.129	0.007	0.003	0.10217
840.00	11.9048	1.930	0.070	0.007	0.001	0.10267
850.00	11.7647	1.989	0.084	0.008	0.002	0.11166
860.00	11.6279	1.927	0.171	0.007	0.003	0.10474
870.00	11.4943	1.857	0.086	0.006	0.002	0.09209
880.00	11.3636	1.910	0.062	0.007	0.001	0.09952
890.00	11.2360	1.919	0.063	0.007	0.001	0.10082
900.00	11.1111	1.924	0.063	0.007	0.001	0.10162
910.00	10.9890	1.929	0.062	0.007	0.001	0.10234
920.00	10.8696	1.932	0.062	0.007	0.001	0.10283
930.00	10.7527	1.934	0.064	0.007	0.001	0.10309
940.00	10.6383	1.935	0.063	0.007	0.001	0.10327
950.00	10.5263	1.939	0.063	0.007	0.001	0.10382
960.00	10.4167	1.939	0.066	0.007	0.001	0.10388
970.00	10.3093	1.937	0.065	0.007	0.001	0.10363
980.00	10.2041	1.951	0.064	0.007	0.001	0.10561
990.00	10.1010	1.934	0.085	0.007	0.002	0.10353
1000.00	10.0000	1.918	0.059	0.007	0.001	0.10072
1010.00	9.9010	1.934	0.062	0.007	0.001	0.10305
1020.00	9.8039	1.927	0.055	0.007	0.001	0.10203
1030.00	9.7087	1.937	0.046	0.007	0.001	0.10332
1040.00	9.6154	1.942	0.044	0.007	0.001	0.10404
1050.00	9.5238	1.950	0.040	0.007	0.001	0.10521
1060.00	9.4340	1.960	0.040	0.007	0.001	0.10680
1070.00	9.3458	1.968	0.044	0.007	0.001	0.10795
1080.00	9.2593	1.975	0.048	0.007	0.001	0.10899
1090.00	9.1743	1.98	0.053	0.007	0.001	0.11005
1100.00	9.0909	1.989	0.057	0.008	0.001	0.11116
1110.00	9.0090	1.995	0.069	0.008	0.001	0.11221
1120.00	8.9286	1.992	0.078	0.008	0.002	0.11189
1130.00	8.8496	1.992	0.079	0.008	0.002	0.11199
1140.00	8.7719	1.999	0.081	0.008	0.002	0.11310
1150.00	8.6957	2.009	0.091	0.008	0.002	0.11470
1160.00	8.6207	2.018	0.106	0.008	0.002	0.11642
1170.00	8.5470	2.028	0.139	0.008	0.003	0.11863

WN	WL	N	K	DN	DK	R
1180.00	8.4746	1.989	0.194	0.008	0.004	0.11471
1190.00	8.4034	1.916	0.169	0.007	0.003	0.10305
1200.00	8.3333	1.917	0.118	0.007	0.002	0.10162
1210.00	8.2645	1.936	0.100	0.007	0.002	0.10409
1220.00	8.1967	1.959	0.105	0.007	0.002	0.10757
1230.00	8.1301	1.954	0.122	0.007	0.002	0.10729
1240.00	8.0645	1.945	0.113	0.007	0.002	0.10571
1250.00	8.0000	1.957	0.109	0.007	0.002	0.10739
1260.00	7.9365	1.963	0.117	0.007	0.002	0.10845
1270.00	7.8740	1.962	0.123	0.007	0.002	0.10846
1280.00	7.8125	1.964	0.123	0.007	0.002	0.10876
1290.00	7.7519	1.972	0.128	0.008	0.003	0.11008
1300.00	7.6923	1.979	0.138	0.008	0.003	0.11142
1310.00	7.6336	1.988	0.156	0.008	0.003	0.11322
1320.00	7.5758	1.991	0.191	0.008	0.004	0.11487
1330.00	7.5188	1.955	0.232	0.008	0.005	0.11137
1340.00	7.4627	1.917	0.223	0.007	0.004	0.10538
1350.00	7.4074	1.889	0.264	0.007	0.005	0.10353
1360.00	7.3529	1.782	0.214	0.006	0.004	0.08560
1370.00	7.2993	1.811	0.118	0.006	0.002	0.08604
1380.00	7.2464	1.842	0.112	0.006	0.002	0.09048
1390.00	7.1942	1.854	0.102	0.006	0.002	0.09201
1400.00	7.1429	1.868	0.101	0.006	0.002	0.09399
1410.00	7.0922	1.870	0.101	0.006	0.002	0.09436
1420.00	7.0423	1.875	0.096	0.007	0.002	0.09494
1430.00	6.9930	1.879	0.093	0.007	0.002	0.09547
1440.00	6.9444	1.884	0.089	0.007	0.002	0.09608
1450.00	6.8966	1.891	0.083	0.007	0.002	0.09697
1460.00	6.8493	1.903	0.079	0.007	0.002	0.09880
1470.00	6.8027	1.916	0.084	0.007	0.002	0.10082
1480.00	6.7568	1.926	0.088	0.007	0.002	0.10227
1490.00	6.7114	1.947	0.087	0.007	0.002	0.10544
1500.00	6.6667	2.008	0.170	0.008	0.003	0.11665
1510.00	6.6225	1.859	0.228	0.007	0.004	0.09738
1520.00	6.5789	1.841	0.098	0.006	0.002	0.08989
1530.00	6.5359	1.901	0.108	0.007	0.002	0.09906
1540.00	6.4935	1.905	0.143	0.007	0.003	0.10065
1550.00	6.4516	1.872	0.140	0.007	0.003	0.09568
1560.00	6.4103	1.892	0.122	0.007	0.002	0.09812
1570.00	6.3694	1.899	0.157	0.007	0.003	0.10014
1580.00	6.3291	1.854	0.178	0.007	0.003	0.09443
1590.00	6.2893	1.817	0.144	0.006	0.003	0.08773
1600.00	6.2500	1.823	0.112	0.006	0.002	0.08770
1610.00	6.2112	1.832	0.097	0.006	0.002	0.08867
1620.00	6.1728	1.843	0.090	0.006	0.002	0.09011
1630.00	6.1350	1.850	0.088	0.006	0.002	0.09112
1640.00	6.0976	1.854	0.088	0.006	0.002	0.09166
1650.00	6.0606	1.856	0.087	0.006	0.002	0.09197
1660.00	6.0241	1.858	0.087	0.006	0.002	0.09225
1670.00	5.9880	1.857	0.085	0.006	0.002	0.09202

WN	WL	N	K	DN	DK	R
1680.00	5.9524	1.859	0.082	0.006	0.002	0.09224
1690.00	5.9172	1.859	0.081	0.006	0.002	0.09234
1700.00	5.8824	1.861	0.077	0.006	0.002	0.09245
1710.00	5.8480	1.864	0.076	0.006	0.001	0.09295
1720.00	5.8140	1.864	0.076	0.006	0.001	0.09291
1730.00	5.7803	1.866	0.073	0.006	0.001	0.09311
1740.00	5.7471	1.867	0.072	0.006	0.001	0.09335
1750.00	5.7143	1.869	0.070	0.006	0.001	0.09362
1760.00	5.6818	1.871	0.070	0.006	0.001	0.09388
1770.00	5.6497	1.874	0.068	0.006	0.001	0.09426
1780.00	5.6180	1.876	0.070	0.006	0.001	0.09462
1790.00	5.5866	1.877	0.069	0.006	0.001	0.09472
1800.00	5.5556	1.880	0.070	0.007	0.001	0.09513
1810.00	5.5249	1.879	0.071	0.006	0.001	0.09503
1820.00	5.4945	1.879	0.069	0.006	0.001	0.09497
1830.00	5.4645	1.882	0.069	0.007	0.001	0.09543
1840.00	5.4348	1.882	0.070	0.007	0.001	0.09549
1850.00	5.4054	1.884	0.069	0.007	0.001	0.09571
1860.00	5.3763	1.885	0.070	0.007	0.001	0.09590
1870.00	5.3476	1.885	0.070	0.007	0.001	0.09594
1880.00	5.3191	1.886	0.070	0.007	0.001	0.09608
1890.00	5.2910	1.888	0.070	0.007	0.001	0.09633
1900.00	5.2632	1.888	0.072	0.007	0.001	0.09640
1910.00	5.2356	1.888	0.072	0.007	0.001	0.09643
1920.00	5.2083	1.887	0.072	0.007	0.001	0.09632
1930.00	5.1813	1.889	0.071	0.007	0.001	0.09656
1940.00	5.1546	1.890	0.072	0.007	0.001	0.09675
1950.00	5.1282	1.891	0.072	0.007	0.001	0.09689
1960.00	5.1020	1.892	0.073	0.007	0.001	0.09699
1970.00	5.0761	1.894	0.074	0.007	0.001	0.09726
1980.00	5.0505	1.894	0.075	0.007	0.001	0.09741
1990.00	5.0251	1.895	0.081	0.007	0.002	0.09755
2000.00	5.0000	1.888	0.081	0.007	0.002	0.09650
2010.00	4.9751	1.886	0.076	0.007	0.002	0.09619
2020.00	4.9505	1.888	0.072	0.007	0.001	0.09636
2030.00	4.9261	1.891	0.072	0.007	0.001	0.09683
2040.00	4.9020	1.893	0.071	0.007	0.001	0.09713
2050.00	4.8780	1.893	0.074	0.007	0.001	0.09723
2060.00	4.8544	1.893	0.071	0.007	0.001	0.09715
2070.00	4.8309	1.897	0.069	0.007	0.001	0.09771
2080.00	4.8077	1.900	0.071	0.007	0.001	0.09823
2090.00	4.7847	1.903	0.071	0.007	0.001	0.09856
2100.00	4.7619	1.907	0.072	0.007	0.001	0.09926
2110.00	4.7393	1.912	0.076	0.007	0.002	0.10004
2120.00	4.7170	1.914	0.080	0.007	0.002	0.10042
2130.00	4.6948	1.916	0.082	0.007	0.002	0.10077
2140.00	4.6729	1.922	0.086	0.007	0.002	0.10175
2150.00	4.6512	1.930	0.094	0.007	0.002	0.10300
2160.00	4.6296	1.935	0.111	0.007	0.002	0.10412
2170.00	4.6083	1.922	0.125	0.007	0.002	0.10259

WN	WL	N	K	DN	DK	R
2180.00	4.5872	1.925	0.123	0.007	0.002	0.10296
2190.00	4.5662	1.959	0.158	0.008	0.003	0.10897
2200.00	4.5455	1.882	0.253	0.007	0.005	0.10201
2210.00	4.5249	1.772	0.177	0.006	0.003	0.08243
2220.00	4.5045	1.799	0.124	0.006	0.002	0.08442
2230.00	4.4843	1.789	0.098	0.006	0.002	0.08234
2240.00	4.4643	1.817	0.066	0.006	0.001	0.08589
2250.00	4.4444	1.833	0.066	0.006	0.001	0.08819
2260.00	4.4248	1.842	0.067	0.006	0.001	0.08959
2270.00	4.4053	1.846	0.067	0.006	0.001	0.09015
2280.00	4.3860	1.849	0.065	0.006	0.001	0.09046
2290.00	4.3668	1.852	0.062	0.006	0.001	0.09086
2300.00	4.3478	1.856	0.061	0.006	0.001	0.09154
2310.00	4.3290	1.860	0.060	0.006	0.001	0.09205
2320.00	4.3103	1.862	0.060	0.006	0.001	0.09245
2330.00	4.2918	1.864	0.061	0.006	0.001	0.09268
2340.00	4.2735	1.865	0.061	0.006	0.001	0.09283
2350.00	4.2553	1.866	0.060	0.006	0.001	0.09295
2360.00	4.2373	1.867	0.059	0.006	0.001	0.09307
2370.00	4.2194	1.868	0.058	0.006	0.001	0.09329
2380.00	4.2017	1.870	0.057	0.006	0.001	0.09358
2390.00	4.1841	1.873	0.056	0.006	0.001	0.09394
2400.00	4.1667	1.875	0.057	0.006	0.001	0.09427
2410.00	4.1494	1.876	0.058	0.006	0.001	0.09445
2420.00	4.1322	1.876	0.059	0.006	0.001	0.09445
2430.00	4.1152	1.876	0.059	0.006	0.001	0.09442
2440.00	4.0994	1.877	0.057	0.006	0.001	0.09450
2450.00	4.0816	1.878	0.057	0.006	0.001	0.09474
2460.00	4.0650	1.880	0.057	0.006	0.001	0.09495
2470.00	4.0486	1.881	0.057	0.006	0.001	0.09511
2480.00	4.0323	1.882	0.057	0.007	0.001	0.09524
2490.00	4.0161	1.883	0.058	0.007	0.001	0.09540
2500.00	4.0000	1.883	0.058	0.007	0.001	0.09550
2510.00	3.9841	1.883	0.058	0.007	0.001	0.09550
2520.00	3.9683	1.884	0.058	0.007	0.001	0.09559
2530.00	3.9526	1.885	0.058	0.007	0.001	0.09573
2540.00	3.9370	1.885	0.059	0.007	0.001	0.09576
2550.00	3.9216	1.884	0.059	0.007	0.001	0.09564
2560.00	3.9063	1.884	0.058	0.007	0.001	0.09566
2570.00	3.8911	1.886	0.057	0.007	0.001	0.09593
2580.00	3.8760	1.888	0.058	0.007	0.001	0.09622
2590.00	3.8610	1.888	0.059	0.007	0.001	0.09623
2600.00	3.8462	1.887	0.059	0.007	0.001	0.09606
2610.00	3.8314	1.897	0.058	0.007	0.001	0.09603
2620.00	3.8168	1.889	0.057	0.007	0.001	0.09620
2630.00	3.8023	1.890	0.057	0.007	0.001	0.09649
2640.00	3.7879	1.891	0.058	0.007	0.001	0.09665
2650.00	3.7736	1.891	0.059	0.007	0.001	0.09665
2660.00	3.7594	1.890	0.059	0.007	0.001	0.09653
2670.00	3.7453	1.890	0.058	0.007	0.001	0.09655

WN	WL	N	K	DN	DK	R
2680.00	3.7313	1.892	0.058	0.007	0.001	0.09675
2690.00	3.7175	1.892	0.058	0.007	0.001	0.09685
2700.00	3.7037	1.892	0.059	0.007	0.001	0.09677
2710.00	3.6900	1.892	0.058	0.007	0.001	0.09673
2720.00	3.6765	1.893	0.057	0.007	0.001	0.09684
2730.00	3.6630	1.893	0.058	0.007	0.001	0.09700
2740.00	3.6496	1.893	0.058	0.007	0.001	0.09700
2750.00	3.6364	1.893	0.057	0.007	0.001	0.09699
2760.00	3.6232	1.894	0.056	0.007	0.001	0.09711
2770.00	3.6101	1.896	0.055	0.007	0.001	0.09731
2780.00	3.5971	1.897	0.056	0.007	0.001	0.09752
2790.00	3.5842	1.898	0.056	0.007	0.001	0.09761
2800.00	3.5714	1.898	0.057	0.007	0.001	0.09765
2810.00	3.5587	1.897	0.057	0.007	0.001	0.09760
2820.00	3.5461	1.898	0.056	0.007	0.001	0.09772
2830.00	3.5336	1.900	0.055	0.007	0.001	0.09798
2840.00	3.5211	1.901	0.057	0.007	0.001	0.09818
2850.00	3.5088	1.901	0.058	0.007	0.001	0.09817
2860.00	3.4965	1.901	0.058	0.007	0.001	0.09807
2870.00	3.4843	1.900	0.057	0.007	0.001	0.09805
2880.00	3.4722	1.901	0.056	0.007	0.001	0.09807
2890.00	3.4602	1.901	0.055	0.007	0.001	0.09818
2900.00	3.4483	1.903	0.055	0.007	0.001	0.09843
2910.00	3.4364	1.905	0.055	0.007	0.001	0.09871
2920.00	3.4247	1.906	0.057	0.007	0.001	0.09885
2930.00	3.4130	1.905	0.058	0.007	0.001	0.09880
2940.00	3.4014	1.905	0.057	0.007	0.001	0.09871
2950.00	3.3898	1.905	0.057	0.007	0.001	0.09875
2960.00	3.3784	1.906	0.056	0.007	0.001	0.09884
2970.00	3.3670	1.907	0.055	0.007	0.001	0.09900
2980.00	3.3557	1.908	0.056	0.007	0.001	0.09911
2990.00	3.3445	1.908	0.055	0.007	0.001	0.09915
3000.00	3.3333	1.909	0.054	0.007	0.001	0.09926
3010.00	3.3223	1.911	0.053	0.007	0.001	0.09955
3020.00	3.3113	1.915	0.053	0.007	0.001	0.10012
3030.00	3.3003	1.918	0.056	0.007	0.001	0.10068
3040.00	3.2895	1.918	0.061	0.007	0.001	0.10078
3050.00	3.2787	1.914	0.064	0.007	0.001	0.10020
3060.00	3.2680	1.909	0.062	0.007	0.001	0.09945
3070.00	3.2573	1.908	0.057	0.007	0.001	0.09923
3080.00	3.2468	1.911	0.053	0.007	0.001	0.09961
3090.00	3.2362	1.915	0.053	0.007	0.001	0.10015
3100.00	3.2258	1.917	0.053	0.007	0.001	0.10053
3110.00	3.2154	1.919	0.054	0.007	0.001	0.10084
3120.00	3.2051	1.921	0.055	0.007	0.001	0.10108
3130.00	3.1949	1.922	0.056	0.007	0.001	0.10120
3140.00	3.1847	1.922	0.056	0.007	0.001	0.10120
3150.00	3.1746	1.923	0.056	0.007	0.001	0.10134
3160.00	3.1646	1.925	0.056	0.007	0.001	0.10161
3170.00	3.1546	1.926	0.056	0.007	0.001	0.10185

WN	WL	N	K	DN	DK	R
3180.00	3.1447	1.927	0.057	0.007	0.001	0.10199
3190.00	3.1348	1.928	0.057	0.007	0.001	0.10214
3200.00	3.1250	1.930	0.058	0.007	0.001	0.10241
3210.00	3.1153	1.931	0.059	0.007	0.001	0.10258
3220.00	3.1056	1.931	0.060	0.007	0.001	0.10269
3230.00	3.0960	1.932	0.060	0.007	0.001	0.10275
3240.00	3.0864	1.933	0.060	0.007	0.001	0.10292
3250.00	3.0769	1.935	0.060	0.007	0.001	0.10316
3260.00	3.0675	1.936	0.061	0.007	0.001	0.10337
3270.00	3.0581	1.937	0.062	0.007	0.001	0.10353
3280.00	3.0488	1.938	0.063	0.007	0.001	0.10372
3290.00	3.0395	1.939	0.064	0.007	0.001	0.10394
3300.00	3.0303	1.940	0.065	0.007	0.001	0.10409
3310.00	3.0211	1.941	0.066	0.007	0.001	0.10419
3320.00	3.0120	1.942	0.066	0.007	0.001	0.10433
3330.00	3.0030	1.943	0.067	0.007	0.001	0.10454
3340.00	2.9940	1.944	0.068	0.007	0.001	0.10473
3350.00	2.9851	1.946	0.069	0.007	0.001	0.10491
3360.00	2.9762	1.947	0.070	0.007	0.001	0.10511
3370.00	2.9674	1.948	0.072	0.007	0.001	0.10525
3380.00	2.9586	1.947	0.073	0.007	0.001	0.10525
3390.00	2.9499	1.948	0.073	0.007	0.001	0.10531
3400.00	2.9412	1.949	0.073	0.007	0.001	0.10552
3410.00	2.9326	1.951	0.074	0.007	0.001	0.10581
3420.00	2.9240	1.952	0.076	0.007	0.002	0.10602
3430.00	2.9155	1.953	0.078	0.007	0.002	0.10615
3440.00	2.9070	1.953	0.080	0.007	0.002	0.10620
3450.00	2.8986	1.953	0.081	0.007	0.002	0.10620
3460.00	2.8902	1.953	0.082	0.007	0.002	0.10616
3470.00	2.8818	1.954	0.081	0.007	0.002	0.10631
3480.00	2.8736	1.956	0.083	0.007	0.002	0.10665
3490.00	2.8653	1.957	0.085	0.007	0.002	0.10688
3500.00	2.8571	1.957	0.087	0.007	0.002	0.10690
3510.00	2.8490	1.957	0.089	0.007	0.002	0.10688
3520.00	2.8409	1.957	0.089	0.007	0.002	0.10691
3530.00	2.8329	1.958	0.090	0.007	0.002	0.10707
3540.00	2.8249	1.958	0.092	0.007	0.002	0.10721
3550.00	2.8169	1.958	0.095	0.007	0.002	0.10725
3560.00	2.8090	1.957	0.097	0.007	0.002	0.10713
3570.00	2.8011	1.956	0.098	0.007	0.002	0.10694
3580.00	2.7933	1.955	0.098	0.007	0.002	0.10678
3590.00	2.7855	1.954	0.097	0.007	0.002	0.10670
3600.00	2.7778	1.955	0.096	0.007	0.002	0.10681
3610.00	2.7701	1.957	0.097	0.007	0.002	0.10710
3620.00	2.7624	1.959	0.098	0.007	0.002	0.10736
3630.00	2.7548	1.959	0.100	0.007	0.002	0.10745
3640.00	2.7473	1.959	0.102	0.007	0.002	0.10750
3650.00	2.7397	1.959	0.103	0.007	0.002	0.10755
3660.00	2.7322	1.959	0.105	0.007	0.002	0.10749
3670.00	2.7248	1.957	0.106	0.007	0.002	0.10731



WN	WL	N	K	DN	DK	R
3680.00	2.7174	1.956	0.106	0.007	0.002	0.10713
3690.00	2.7100	1.956	0.105	0.007	0.002	0.10711
3700.00	2.7027	1.957	0.104	0.007	0.002	0.10729
3710.00	2.6954	1.959	0.105	0.007	0.002	0.10751
3720.00	2.6882	1.959	0.106	0.007	0.002	0.10766
3730.00	2.6810	1.960	0.107	0.007	0.002	0.10777
3740.00	2.6738	1.961	0.109	0.007	0.002	0.10789
3750.00	2.6667	1.960	0.110	0.007	0.002	0.10784
3760.00	2.6596	1.959	0.111	0.007	0.002	0.10774
3770.00	2.6525	1.960	0.110	0.007	0.002	0.10777
3780.00	2.6455	1.962	0.110	0.007	0.002	0.10807
3790.00	2.6385	1.963	0.111	0.007	0.002	0.10836
3800.00	2.6316	1.964	0.114	0.007	0.002	0.10849
3810.00	2.6247	1.963	0.115	0.007	0.002	0.10845
3820.00	2.6178	1.963	0.116	0.007	0.002	0.10845
3830.00	2.6110	1.963	0.116	0.007	0.002	0.10848
3840.00	2.6042	1.964	0.117	0.007	0.002	0.10857
3850.00	2.5974	1.965	0.118	0.007	0.002	0.10873
3860.00	2.5907	1.966	0.119	0.007	0.002	0.10892
3870.00	2.5840	1.967	0.121	0.007	0.002	0.10905
3880.00	2.5773	1.966	0.123	0.007	0.002	0.10905
3890.00	2.5707	1.965	0.124	0.007	0.002	0.10896
3900.00	2.5641	1.965	0.124	0.007	0.002	0.10890
3910.00	2.5575	1.965	0.124	0.007	0.002	0.10893
3920.00	2.5510	1.967	0.124	0.007	0.002	0.10920
3930.00	2.5445	1.969	0.126	0.007	0.003	0.10951
3940.00	2.5381	1.970	0.128	0.008	0.003	0.10970
3950.00	2.5316	1.969	0.130	0.008	0.003	0.10965
3960.00	2.5253	1.969	0.131	0.008	0.003	0.10963
3970.00	2.5189	1.969	0.133	0.008	0.003	0.10973
3980.00	2.5126	1.969	0.135	0.008	0.003	0.10980
3990.00	2.5063	1.968	0.137	0.008	0.003	0.10964
4000.00	2.5000	1.966	0.137	0.008	0.003	0.10942
4016.06	2.4900	1.965	0.136	0.007	0.003	0.10930
4032.26	2.4800	1.966	0.137	0.008	0.003	0.10947
4048.58	2.4700	1.967	0.138	0.008	0.003	0.10963
4065.04	2.4600	1.967	0.140	0.008	0.003	0.10969
4081.63	2.4500	1.968	0.140	0.008	0.003	0.10981
4098.36	2.4400	1.970	0.142	0.008	0.003	0.11011
4115.23	2.4300	1.971	0.144	0.008	0.003	0.11028
4132.23	2.4200	1.972	0.145	0.008	0.003	0.11049
4149.38	2.4100	1.973	0.147	0.008	0.003	0.11076
4166.67	2.4000	1.974	0.149	0.008	0.003	0.11100
4184.10	2.3900	1.976	0.152	0.008	0.003	0.11124
4201.68	2.3800	1.977	0.155	0.008	0.003	0.11148
4219.41	2.3700	1.977	0.158	0.008	0.003	0.11151
4237.29	2.3600	1.977	0.161	0.008	0.003	0.11178
4255.32	2.3500	1.978	0.164	0.008	0.003	0.11193
4273.50	2.3400	1.978	0.167	0.008	0.003	0.11204
4291.85	2.3300	1.979	0.170	0.008	0.003	0.11228

WN	WL	N	K	DM	DK	R
4310.34	2.3200	1.978	0.174	0.008	0.003	0.11231
4329.00	2.3100	1.978	0.176	0.008	0.004	0.11239
4347.83	2.3000	1.977	0.180	0.008	0.004	0.11245
4366.81	2.2900	1.977	0.183	0.008	0.004	0.11250
4385.96	2.2800	1.977	0.186	0.008	0.004	0.11258
4405.29	2.2700	1.975	0.189	0.008	0.004	0.11245
4424.78	2.2600	1.975	0.191	0.008	0.004	0.11251
4444.44	2.2500	1.975	0.194	0.008	0.004	0.11258
4464.29	2.2400	1.974	0.198	0.008	0.004	0.11265
4484.30	2.2300	1.973	0.201	0.008	0.004	0.11257
4504.50	2.2200	1.972	0.204	0.008	0.004	0.11265
4524.89	2.2100	1.970	0.207	0.008	0.004	0.11251
4545.45	2.2000	1.970	0.210	0.008	0.004	0.11257
4566.21	2.1900	1.969	0.214	0.008	0.004	0.11253
4587.16	2.1800	1.967	0.217	0.008	0.004	0.11241
4608.29	2.1700	1.966	0.220	0.008	0.004	0.11245
4629.63	2.1600	1.965	0.223	0.008	0.004	0.11240
4651.16	2.1500	1.964	0.227	0.008	0.004	0.11238
4672.90	2.1400	1.961	0.231	0.008	0.005	0.11219
4694.84	2.1300	1.959	0.233	0.008	0.005	0.11196
4716.98	2.1200	1.957	0.235	0.008	0.005	0.11187
4739.34	2.1100	1.956	0.239	0.008	0.005	0.11190
4761.90	2.1000	1.954	0.243	0.008	0.005	0.11178
4784.69	2.0900	1.952	0.247	0.008	0.005	0.11163
4807.69	2.0800	1.949	0.251	0.008	0.005	0.11137
4830.92	2.0700	1.945	0.253	0.008	0.005	0.11102
4854.37	2.0600	1.942	0.256	0.008	0.005	0.11075
4878.05	2.0500	1.939	0.258	0.008	0.005	0.11044
4901.96	2.0400	1.937	0.261	0.008	0.005	0.11026
4926.11	2.0300	1.934	0.264	0.008	0.005	0.11003
4950.50	2.0200	1.931	0.267	0.008	0.005	0.10974
4975.12	2.0100	1.928	0.269	0.008	0.005	0.10949
5000.00	2.0000	1.924	0.273	0.008	0.005	0.10905
5025.13	1.9900	1.920	0.274	0.008	0.005	0.10852
5050.51	1.9800	1.917	0.276	0.008	0.005	0.10817
5076.14	1.9700	1.914	0.278	0.008	0.005	0.10791
5102.04	1.9600	1.911	0.280	0.008	0.005	0.10757
5128.21	1.9500	1.907	0.282	0.008	0.005	0.10721
5154.64	1.9400	1.904	0.284	0.008	0.005	0.10686
5181.35	1.9300	1.900	0.287	0.008	0.005	0.10650
5208.33	1.9200	1.896	0.289	0.008	0.005	0.10604
5235.60	1.9100	1.892	0.290	0.008	0.006	0.10550
5263.16	1.9000	1.887	0.292	0.008	0.006	0.10500
5291.01	1.8900	1.883	0.294	0.007	0.006	0.10443
5319.15	1.8800	1.876	0.295	0.007	0.006	0.10386
5347.59	1.8700	1.870	0.291	0.007	0.005	0.10256
5376.34	1.8600	1.870	0.289	0.007	0.005	0.10240
5405.41	1.8500	1.871	0.290	0.007	0.005	0.10266
5434.78	1.8400	1.868	0.295	0.007	0.006	0.10255
5464.48	1.8300	1.863	0.298	0.007	0.006	0.10200

WN	WL	N	K	DN	DK	R
5494.51	1.8200	1.856	0.299	0.007	0.006	0.10105
5524.86	1.8100	1.851	0.296	0.007	0.006	0.10026
5555.56	1.8000	1.850	0.295	0.007	0.006	0.10000
5586.59	1.7900	1.848	0.298	0.007	0.006	0.09993
5617.98	1.7800	1.843	0.299	0.007	0.006	0.09926
5649.72	1.7700	1.839	0.299	0.007	0.006	0.09875
5681.82	1.7600	1.835	0.300	0.007	0.006	0.09825
5714.29	1.7500	1.831	0.300	0.007	0.006	0.09759
5747.13	1.7400	1.827	0.299	0.007	0.006	0.09707
5780.35	1.7300	1.823	0.300	0.007	0.006	0.09656
5813.95	1.7200	1.819	0.300	0.007	0.006	0.09592
5847.95	1.7100	1.815	0.299	0.007	0.006	0.09538
5882.35	1.7000	1.811	0.299	0.007	0.005	0.09472
5917.16	1.6900	1.807	0.297	0.007	0.005	0.09413
5952.38	1.6800	1.803	0.297	0.007	0.005	0.09360
5988.02	1.6700	1.799	0.296	0.007	0.005	0.09294
6024.10	1.6600	1.795	0.295	0.007	0.005	0.09232
6060.61	1.6500	1.792	0.293	0.007	0.005	0.09179
6097.56	1.6400	1.789	0.293	0.007	0.005	0.09134
6134.97	1.6300	1.785	0.292	0.007	0.005	0.09068
6172.84	1.6200	1.782	0.290	0.007	0.005	0.09015
6211.18	1.6100	1.778	0.289	0.007	0.005	0.08963
6250.00	1.6000	1.775	0.288	0.007	0.005	0.08912
6289.31	1.5900	1.769	0.288	0.007	0.005	0.08822
6329.11	1.5800	1.766	0.282	0.006	0.005	0.08735
6369.43	1.5700	1.766	0.281	0.006	0.005	0.08739
6410.26	1.5600	1.763	0.280	0.006	0.005	0.08682
6451.61	1.5500	1.760	0.279	0.006	0.005	0.08640
6493.51	1.5400	1.754	0.277	0.006	0.005	0.08538
6535.95	1.5300	1.753	0.271	0.006	0.005	0.08487
6578.95	1.5200	1.754	0.270	0.006	0.005	0.08496
6622.52	1.5100	1.752	0.270	0.006	0.005	0.08465
6666.67	1.5000	1.749	0.269	0.006	0.005	0.08415
6711.41	1.4900	1.746	0.267	0.006	0.005	0.08372
6756.76	1.4800	1.743	0.265	0.006	0.005	0.08320
6802.72	1.4700	1.742	0.264	0.006	0.005	0.08283
6849.32	1.4600	1.739	0.262	0.006	0.005	0.08235
6896.55	1.4500	1.737	0.259	0.006	0.005	0.08192
6944.44	1.4400	1.735	0.258	0.006	0.005	0.08153
6993.01	1.4300	1.733	0.256	0.006	0.005	0.08113
7042.25	1.4200	1.731	0.254	0.006	0.005	0.08074
7092.20	1.4100	1.729	0.251	0.006	0.005	0.08037
7142.86	1.4000	1.727	0.250	0.006	0.005	0.08000
7194.24	1.3900	1.725	0.247	0.006	0.004	0.07956
7246.38	1.3800	1.724	0.245	0.006	0.004	0.07929
7299.27	1.3700	1.723	0.243	0.006	0.004	0.07903
7352.94	1.3600	1.722	0.241	0.006	0.004	0.07873
7407.41	1.3500	1.720	0.238	0.006	0.004	0.07832
7462.69	1.3400	1.719	0.236	0.006	0.004	0.07806
7518.80	1.3300	1.719	0.233	0.006	0.004	0.07790

WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.719	0.232	0.006	0.004	0.07771
7633.59	1.3100	1.718	0.230	0.006	0.004	0.07757
7692.31	1.3000	1.718	0.228	0.006	0.004	0.07737
7751.94	1.2900	1.718	0.227	0.006	0.004	0.07727
7812.50	1.2800	1.717	0.225	0.006	0.004	0.07715
7874.02	1.2700	1.718	0.224	0.006	0.004	0.07713
7936.51	1.2600	1.717	0.223	0.006	0.004	0.07705
8000.00	1.2500	1.717	0.222	0.006	0.004	0.07692
8064.52	1.2400	1.717	0.221	0.006	0.004	0.07683
8130.08	1.2300	1.716	0.220	0.006	0.004	0.07675
8196.72	1.2200	1.716	0.219	0.006	0.004	0.07668
8264.46	1.2100	1.716	0.219	0.006	0.004	0.07660
8333.33	1.2000	1.714	0.218	0.006	0.004	0.07636
8403.36	1.1900	1.714	0.215	0.006	0.004	0.07609
8474.58	1.1800	1.715	0.214	0.006	0.004	0.07621
8547.01	1.1700	1.716	0.214	0.006	0.004	0.07633
8620.69	1.1600	1.717	0.213	0.006	0.004	0.07640
8695.65	1.1500	1.718	0.214	0.006	0.004	0.07661
8771.93	1.1400	1.717	0.215	0.006	0.004	0.07658
8849.56	1.1300	1.717	0.216	0.006	0.004	0.07656
8928.57	1.1200	1.715	0.216	0.006	0.004	0.07638
9009.01	1.1100	1.714	0.215	0.006	0.004	0.07619
9090.91	1.1000	1.715	0.214	0.006	0.004	0.07630
9174.31	1.0900	1.717	0.215	0.006	0.004	0.07651
9259.26	1.0800	1.716	0.217	0.006	0.004	0.07658
9345.79	1.0700	1.717	0.218	0.006	0.004	0.07668
9433.96	1.0600	1.717	0.220	0.006	0.004	0.07680
9523.81	1.0500	1.716	0.222	0.006	0.004	0.07685
9615.38	1.0400	1.714	0.225	0.006	0.004	0.07675
9708.74	1.0300	1.713	0.226	0.006	0.004	0.07669
9803.92	1.0200	1.711	0.229	0.006	0.004	0.07657
9900.99	1.0100	1.710	0.231	0.006	0.004	0.07643
10000.00	1.0000	1.707	0.234	0.006	0.004	0.07628
10101.01	0.9900	1.705	0.235	0.006	0.004	0.07602
10204.08	0.9800	1.702	0.238	0.006	0.004	0.07577
10309.28	0.9700	1.698	0.240	0.006	0.004	0.07537
10416.67	0.9600	1.695	0.241	0.006	0.004	0.07504
10526.32	0.9500	1.692	0.244	0.006	0.004	0.07477
10638.30	0.9400	1.687	0.246	0.006	0.004	0.07421
10752.69	0.9300	1.681	0.248	0.006	0.004	0.07356
10869.57	0.9200	1.675	0.248	0.006	0.004	0.07280
10989.01	0.9100	1.671	0.248	0.005	0.004	0.07219
11111.11	0.9000	1.666	0.249	0.005	0.004	0.07154
11235.96	0.8900	1.659	0.248	0.005	0.004	0.07062
11363.64	0.8800	1.654	0.247	0.005	0.004	0.06984
11494.25	0.8700	1.648	0.245	0.005	0.004	0.06890
11627.91	0.8600	1.642	0.243	0.005	0.004	0.06791
11764.71	0.8500	1.638	0.240	0.005	0.004	0.06719
11904.76	0.8400	1.632	0.238	0.005	0.004	0.06635
12048.19	0.8300	1.627	0.233	0.005	0.004	0.06537

WN	WL	N	K	DN	DK	R
12195.12	0.8200	1.624	0.229	0.005	0.004	0.06474
12345.68	0.8100	1.622	0.227	0.005	0.004	0.06423
12500.00	0.8000	1.619	0.223	0.005	0.004	0.06364
12658.23	0.7900	1.617	0.221	0.005	0.004	0.06332
12820.51	0.7800	1.613	0.220	0.005	0.004	0.06271
12987.01	0.7700	1.610	0.218	0.005	0.004	0.06211
13157.89	0.7600	1.607	0.215	0.005	0.004	0.06152
13333.33	0.7500	1.603	0.213	0.005	0.004	0.06092
13513.51	0.7400	1.599	0.211	0.005	0.004	0.06031
13698.63	0.7300	1.595	0.208	0.005	0.004	0.05963
13888.89	0.7200	1.591	0.206	0.005	0.004	0.05893
14084.51	0.7100	1.587	0.202	0.005	0.004	0.05814
14285.71	0.7000	1.582	0.199	0.005	0.003	0.05736
14492.75	0.6900	1.577	0.195	0.004	0.003	0.05640
14705.88	0.6800	1.572	0.191	0.004	0.003	0.05550
14925.37	0.6700	1.566	0.185	0.004	0.003	0.05445
15151.52	0.6600	1.562	0.178	0.004	0.003	0.05353
15384.62	0.6500	1.558	0.170	0.004	0.003	0.05257
15625.00	0.6400	1.555	0.163	0.004	0.003	0.05193
15873.02	0.6300	1.551	0.155	0.004	0.003	0.05096
16129.03	0.6200	1.549	0.144	0.004	0.003	0.05020
16393.44	0.6100	1.549	0.132	0.004	0.002	0.04972
16666.67	0.6000	1.551	0.121	0.004	0.002	0.04960
16949.15	0.5900	1.554	0.111	0.004	0.002	0.04972
17241.38	0.5800	1.559	0.101	0.004	0.002	0.05009
17543.86	0.5700	1.566	0.093	0.004	0.002	0.05065
17857.14	0.5600	1.572	0.085	0.004	0.002	0.05139
18181.82	0.5500	1.580	0.077	0.004	0.001	0.05227
18518.52	0.5400	1.590	0.070	0.004	0.001	0.05347
18867.92	0.5300	1.601	0.065	0.004	0.001	0.05485
19230.77	0.5200	1.612	0.061	0.004	0.001	0.05631
19607.84	0.5100	1.624	0.058	0.004	0.001	0.05797
20000.00	0.5000	1.638	0.056	0.004	0.001	0.05985
20408.16	0.4900	1.654	0.054	0.004	0.001	0.06206
20833.33	0.4800	1.674	0.054	0.005	0.001	0.06491
21276.60	0.4700	1.699	0.058	0.005	0.001	0.06851
21739.13	0.4600	1.733	0.069	0.005	0.001	0.07367
22222.22	0.4500	1.773	0.106	0.006	0.002	0.08027
22727.27	0.4400	1.787	0.167	0.006	0.003	0.08417
23255.81	0.4300	1.768	0.223	0.006	0.004	0.08419
23809.52	0.4200	1.743	0.253	0.006	0.005	0.08238
24390.24	0.4100	1.731	0.294	0.006	0.005	0.08352
25000.00	0.4000	1.689	0.344	0.006	0.006	0.08187
25641.03	0.3900	1.627	0.374	0.006	0.006	0.07681
26315.79	0.3800	1.558	0.383	0.006	0.006	0.06954
27027.03	0.3700	1.485	0.368	0.005	0.005	0.05967
27777.78	0.3600	1.425	0.328	0.005	0.005	0.04901
28571.43	0.3500	1.384	0.279	0.004	0.004	0.03980
29411.76	0.3400	1.356	0.221	0.003	0.003	0.03194
30303.03	0.3300	1.350	0.159	0.003	0.003	0.02713

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.362	0.107	0.002	0.002	0.02596
32258.06	0.3100	1.383	0.064	0.002	0.001	0.02697
33333.33	0.3000	1.412	0.026	0.003	0.000	0.02984
34482.76	0.2900	1.455	0.005	0.003	0.000	0.03495
35714.29	0.2800	1.493	0.005	0.003	0.000	0.03974
37037.04	0.2700	1.520	0.014	0.003	0.000	0.04333
38461.54	0.2600	1.540	0.026	0.003	0.000	0.04604
40000.00	0.2500	1.557	0.040	0.004	0.001	0.04844
41666.67	0.2400	1.570	0.069	0.004	0.001	0.05069
43478.26	0.2300	1.556	0.102	0.004	0.002	0.04969
45454.55	0.2200	1.528	0.114	0.004	0.002	0.04626
47619.05	0.2100	1.512	0.125	0.004	0.002	0.04462

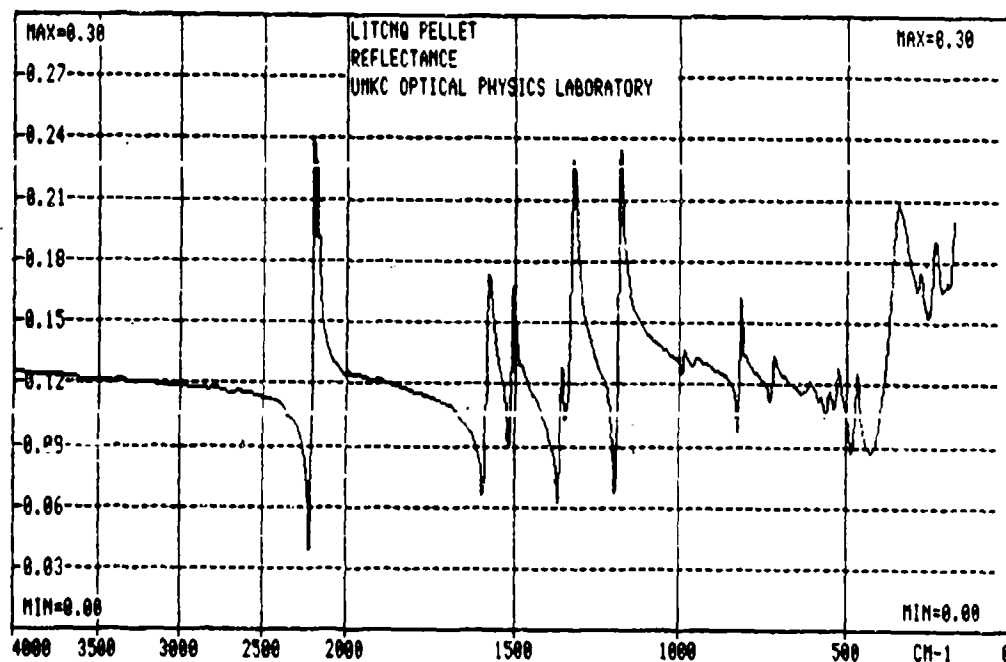


Figure 115. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) reflectance spectrum of the LiTCNQ pellet.

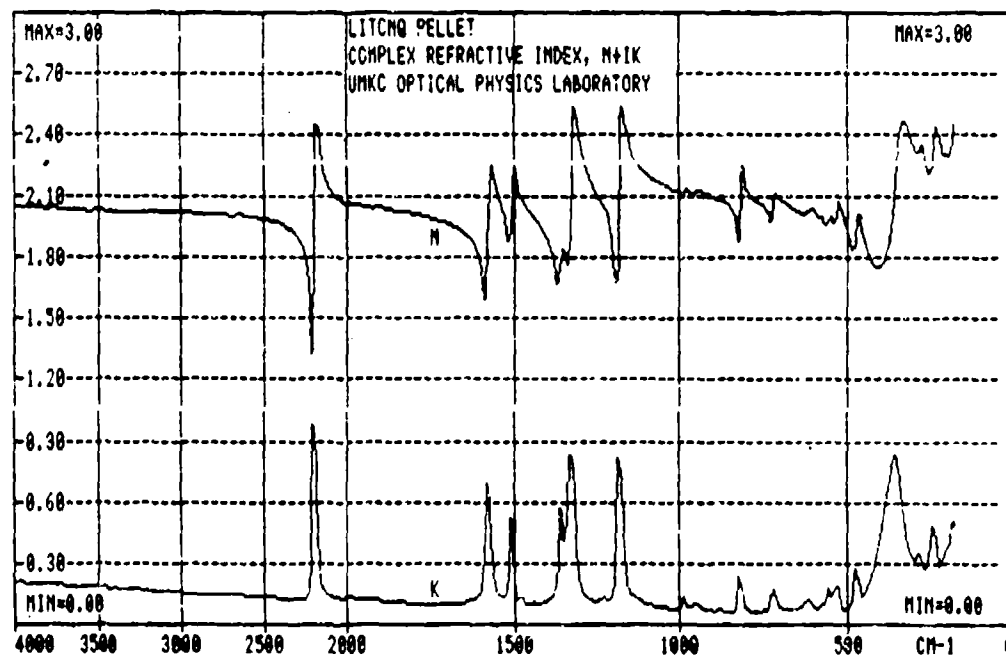


Figure 116. The infrared ( $4,000\text{--}180\text{ cm}^{-1}$ ) complex refractive indices  $n$  and  $k$  for the LiTCNQ pellet.

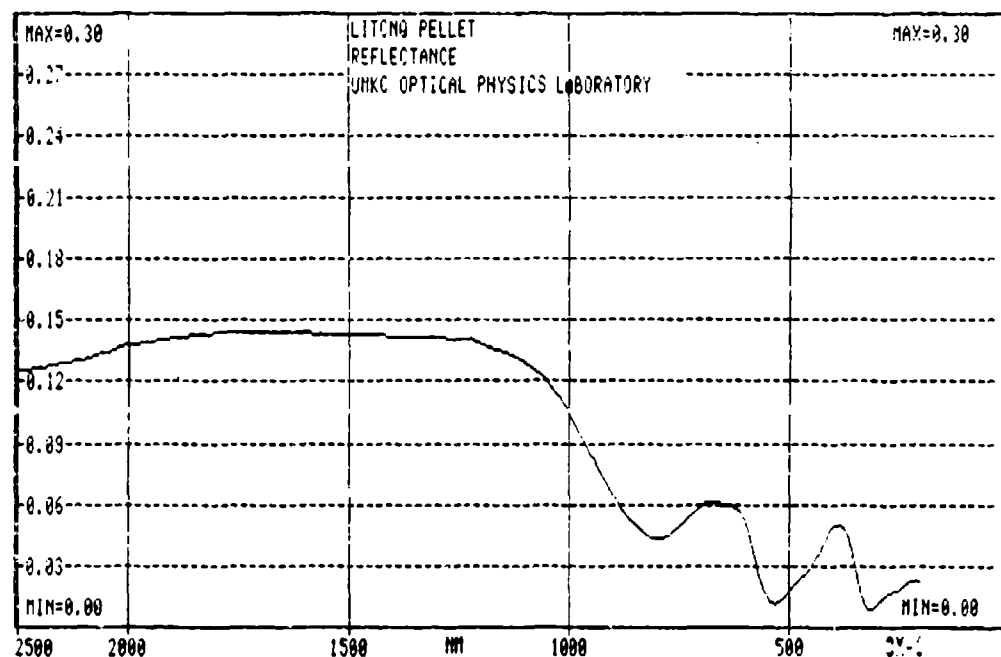


Figure 117. The uv-vis-nir (2,500–200 nm) reflectance spectrum of the LiTCNQ pellet.

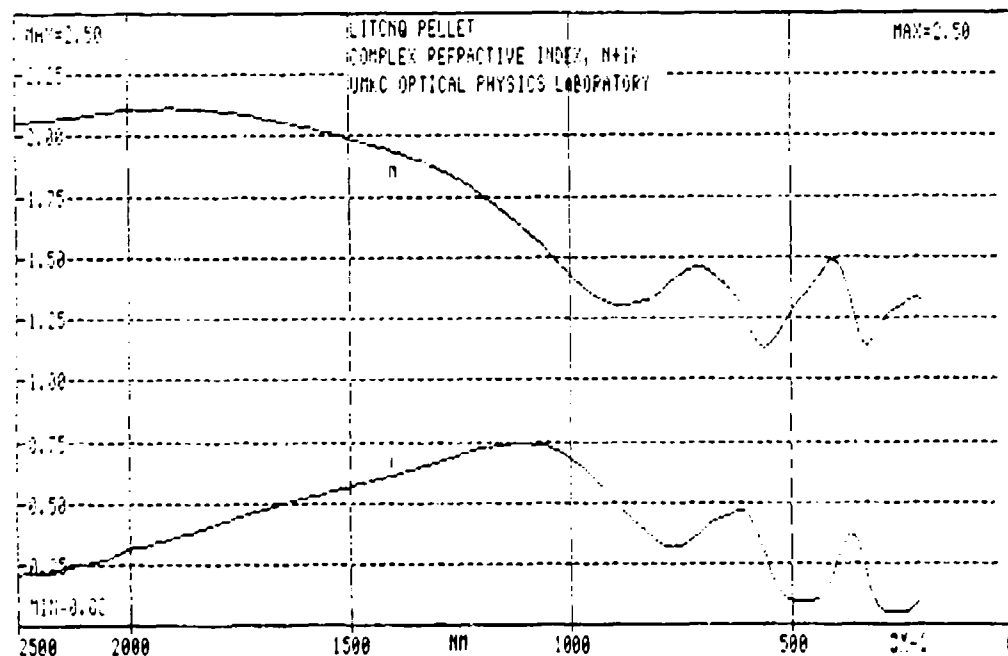


Figure 118. The uv-vis-nir (2,500–210 nm) complex refractive indices  $n$  and  $k$  for the LiTCNQ pellet.



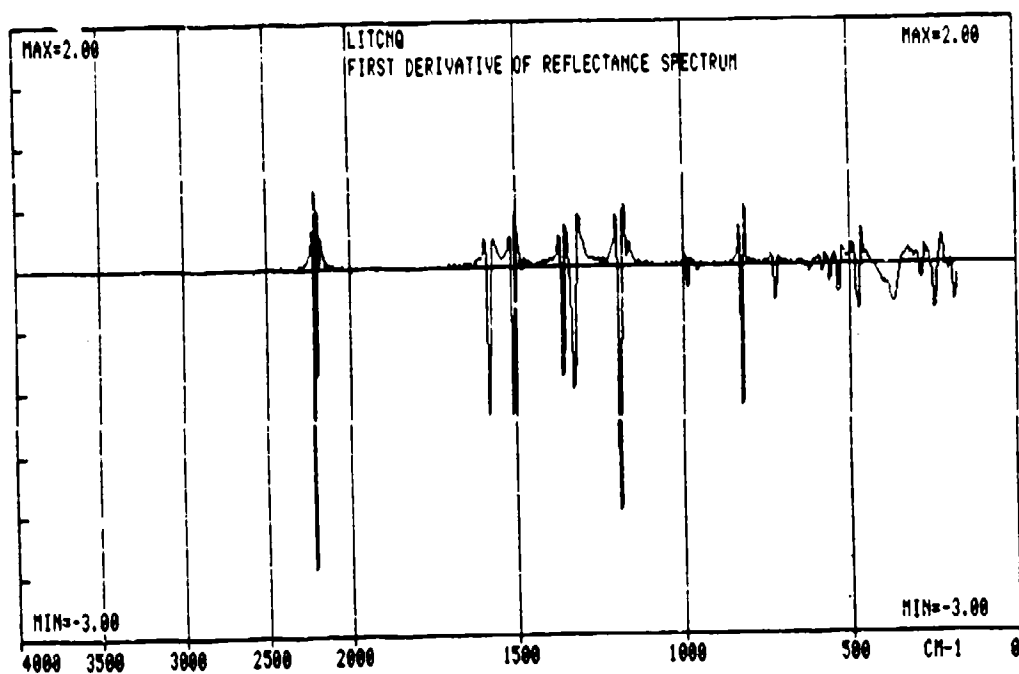


Figure 119. The first derivative of the infrared reflectance spectrum of the LiTCNQ pellet.

WN	WL	N	K	DN	DK	R
180.00	55.5556	2.516	0.477	0.019	0.011	0.20260
190.00	52.6316	2.356	0.530	0.014	0.011	0.18558
200.00	50.0000	2.295	0.392	0.012	0.008	0.16806
210.00	47.6190	2.303	0.364	0.012	0.008	0.16760
220.00	45.4545	2.308	0.316	0.012	0.007	0.16581
230.00	43.4783	2.412	0.284	0.013	0.006	0.17884
240.00	41.6667	2.446	0.439	0.014	0.010	0.19121
250.00	40.0000	2.249	0.497	0.012	0.010	0.16907
260.00	38.4615	2.205	0.344	0.011	0.007	0.15286
270.00	37.0370	2.270	0.282	0.011	0.006	0.15885
280.00	35.7143	2.355	0.299	0.012	0.006	0.17148
290.00	34.4828	2.315	0.367	0.012	0.008	0.16938
300.00	33.3333	2.329	0.317	0.012	0.007	0.16883
310.00	32.2581	2.374	0.336	0.013	0.007	0.17594
320.00	31.2500	2.424	0.379	0.013	0.008	0.18490
330.00	30.3030	2.469	0.464	0.014	0.010	0.19572
340.00	29.4118	2.461	0.595	0.015	0.013	0.20378
350.00	28.5714	2.386	0.749	0.016	0.015	0.20842
360.00	27.7778	2.193	0.848	0.015	0.015	0.19828
370.00	27.0270	1.983	0.805	0.013	0.013	0.17105
380.00	26.3158	1.863	0.690	0.011	0.011	0.14241
390.00	25.6410	1.811	0.592	0.010	0.010	0.12372
400.00	25.0000	1.769	0.505	0.008	0.008	0.10822
410.00	24.3902	1.751	0.409	0.007	0.007	0.09596
420.00	23.8095	1.756	0.324	0.007	0.006	0.08917
430.00	23.2558	1.785	0.251	0.006	0.005	0.08805
440.00	22.7273	1.824	0.196	0.006	0.004	0.09076
450.00	22.2222	1.875	0.155	0.007	0.003	0.09652
460.00	21.7391	1.936	0.139	0.007	0.003	0.10497
470.00	21.2766	2.048	0.232	0.009	0.005	0.12484
480.00	20.8333	1.853	0.281	0.007	0.005	0.09956
490.00	20.4082	1.845	0.110	0.006	0.002	0.09079
500.00	20.0000	1.929	0.083	0.007	0.002	0.10272
510.00	19.6078	1.977	0.077	0.007	0.002	0.10971
520.00	19.2308	2.035	0.084	0.008	0.002	0.11849
530.00	18.8679	2.079	0.186	0.009	0.004	0.12759
540.00	18.5185	1.954	0.183	0.008	0.004	0.10907
550.00	18.1818	1.999	0.133	0.008	0.003	0.11419
560.00	17.8571	1.977	0.179	0.008	0.004	0.11234
570.00	17.5439	1.955	0.102	0.007	0.002	0.10696
580.00	17.2414	2.002	0.105	0.008	0.002	0.11391
590.00	16.9492	1.996	0.084	0.008	0.002	0.11269
600.00	16.6667	2.029	0.084	0.008	0.002	0.11764
610.00	16.3934	2.046	0.102	0.008	0.002	0.12048
620.00	16.1290	2.033	0.128	0.008	0.003	0.11898
630.00	15.8730	2.016	0.111	0.008	0.002	0.11622
640.00	15.6250	2.016	0.092	0.008	0.002	0.11571
650.00	15.3846	2.031	0.082	0.008	0.002	0.11787
660.00	15.1515	2.042	0.080	0.008	0.002	0.11950
670.00	14.9254	2.050	0.078	0.008	0.002	0.12057

WN	WL	N	K	DN	DK	R
680.00	14.7059	2.064	0.076	0.008	0.002	0.12271
690.00	14.4928	2.075	0.081	0.008	0.002	0.12439
700.00	14.2857	2.088	0.083	0.009	0.002	0.12631
710.00	14.0845	2.108	0.099	0.009	0.002	0.12956
720.00	13.8889	2.120	0.179	0.009	0.004	0.13331
730.00	13.6986	1.981	0.147	0.009	0.003	0.11184
740.00	13.5135	2.028	0.071	0.008	0.001	0.11727
750.00	13.3333	2.054	0.074	0.008	0.002	0.12107
760.00	13.1579	2.068	0.070	0.008	0.001	0.12316
770.00	12.9870	2.079	0.072	0.009	0.001	0.12480
780.00	12.8205	2.086	0.072	0.009	0.002	0.12588
790.00	12.6582	2.101	0.070	0.009	0.001	0.12813
800.00	12.5000	2.124	0.076	0.009	0.002	0.13151
810.00	12.3457	2.142	0.096	0.009	0.002	0.13456
820.00	12.1951	2.291	0.182	0.011	0.004	0.15820
830.00	12.0482	1.877	0.238	0.007	0.005	0.10044
840.00	11.9048	2.006	0.072	0.008	0.001	0.11397
850.00	11.7647	2.046	0.067	0.008	0.001	0.11981
860.00	11.6279	2.069	0.067	0.008	0.001	0.12322
870.00	11.4943	2.077	0.071	0.008	0.001	0.12454
880.00	11.3636	2.086	0.073	0.009	0.002	0.12588
890.00	11.2360	2.090	0.074	0.009	0.002	0.12647
900.00	11.1111	2.096	0.071	0.009	0.001	0.12732
910.00	10.9890	2.108	0.073	0.009	0.002	0.12912
920.00	10.8696	2.114	0.075	0.009	0.002	0.13005
930.00	10.7527	2.118	0.080	0.009	0.002	0.13075
940.00	10.6383	2.127	0.087	0.009	0.002	0.13210
950.00	10.5263	2.133	0.101	0.009	0.002	0.13331
960.00	10.4167	2.107	0.102	0.009	0.002	0.12949
970.00	10.3093	2.118	0.084	0.009	0.002	0.13073
980.00	10.2041	2.141	0.090	0.009	0.002	0.13424
990.00	10.1010	2.110	0.144	0.009	0.003	0.13088
1000.00	10.0000	2.110	0.074	0.009	0.002	0.12941
1010.00	9.9010	2.131	0.081	0.009	0.002	0.13264
1020.00	9.8039	2.134	0.080	0.009	0.002	0.13310
1030.00	9.7087	2.144	0.083	0.009	0.002	0.13466
1040.00	9.6154	2.155	0.086	0.009	0.002	0.13627
1050.00	9.5238	2.159	0.084	0.009	0.002	0.13683
1060.00	9.4340	2.171	0.089	0.010	0.002	0.13874
1070.00	9.3458	2.177	0.094	0.010	0.002	0.13967
1080.00	9.2593	2.186	0.096	0.010	0.002	0.14103
1090.00	9.1743	2.195	0.098	0.010	0.002	0.14237
1100.00	9.0909	2.208	0.103	0.010	0.002	0.14432
1110.00	9.0090	2.225	0.106	0.010	0.002	0.14696
1120.00	8.9286	2.240	0.121	0.010	0.003	0.14939
1130.00	8.8496	2.260	0.128	0.011	0.003	0.15240
1140.00	8.7719	2.278	0.144	0.011	0.003	0.15538
1150.00	8.6957	2.319	0.148	0.011	0.003	0.16133
1160.00	8.6207	2.403	0.191	0.012	0.004	0.17446
1170.00	8.5470	2.470	0.327	0.014	0.007	0.18864

WN	WL	N	K	DN	DK	R
1180.00	8.4746	2.581	0.735	0.018	0.016	0.22957
1190.00	8.4034	1.657	0.834	0.011	0.010	0.14717
1200.00	8.3333	1.727	0.187	0.006	0.003	0.07656
1210.00	8.2645	1.924	0.124	0.007	0.002	0.10290
1220.00	8.1967	2.015	0.122	0.008	0.002	0.11621
1230.00	8.1301	2.053	0.141	0.008	0.003	0.12238
1240.00	8.0645	2.078	0.123	0.009	0.003	0.12553
1250.00	8.0000	2.105	0.118	0.009	0.002	0.12947
1260.00	7.9365	2.145	0.118	0.009	0.002	0.13533
1270.00	7.8740	2.184	0.128	0.010	0.003	0.14131
1280.00	7.8125	2.224	0.142	0.010	0.003	0.14750
1290.00	7.7519	2.273	0.158	0.011	0.003	0.15506
1300.00	7.6923	2.359	0.195	0.012	0.004	0.16826
1310.00	7.6336	2.492	0.320	0.014	0.007	0.19133
1320.00	7.5758	2.546	0.778	0.017	0.016	0.22929
1330.00	7.5188	1.899	0.880	0.013	0.013	0.17441
1340.00	7.4627	1.753	0.528	0.009	0.009	0.10919
1350.00	7.4074	1.855	0.387	0.008	0.007	0.10743
1360.00	7.3529	1.765	0.588	0.009	0.009	0.11802
1370.00	7.2993	1.646	0.202	0.005	0.004	0.06604
1380.00	7.2464	1.798	0.145	0.006	0.003	0.08508
1390.00	7.1942	1.851	0.127	0.006	0.002	0.09210
1400.00	7.1429	1.899	0.113	0.007	0.002	0.09883
1410.00	7.0922	1.930	0.111	0.007	0.002	0.10340
1420.00	7.0423	1.957	0.108	0.007	0.002	0.10737
1430.00	6.9930	1.980	0.106	0.008	0.002	0.11069
1440.00	6.9444	1.998	0.110	0.008	0.002	0.11346
1450.00	6.8966	2.016	0.105	0.008	0.002	0.11595
1460.00	6.8493	2.044	0.103	0.008	0.002	0.12014
1470.00	6.8027	2.071	0.113	0.009	0.002	0.12438
1480.00	6.7568	2.099	0.143	0.009	0.003	0.12924
1490.00	6.7114	2.131	0.129	0.009	0.003	0.13358
1500.00	6.6667	2.281	0.224	0.011	0.005	0.15813
1510.00	6.6225	1.915	0.542	0.010	0.010	0.13026
1520.00	6.5789	1.879	0.150	0.007	0.003	0.09698
1530.00	6.5359	2.003	0.132	0.008	0.003	0.11466
1540.00	6.4935	2.058	0.143	0.008	0.003	0.12312
1550.00	6.4516	2.110	0.161	0.009	0.003	0.13136
1560.00	6.4103	2.192	0.213	0.010	0.004	0.14497
1570.00	6.3694	2.270	0.396	0.012	0.008	0.16490
1580.00	6.3291	1.983	0.751	0.012	0.012	0.16359
1590.00	6.2893	1.577	0.375	0.006	0.006	0.07091
1600.00	6.2500	1.754	0.164	0.006	0.003	0.07938
1610.00	6.2112	1.823	0.136	0.006	0.003	0.08832
1620.00	6.1728	1.870	0.125	0.007	0.002	0.09492
1630.00	6.1350	1.890	0.123	0.007	0.002	0.09781
1640.00	6.0976	1.907	0.114	0.007	0.002	0.10006
1650.00	6.0606	1.923	0.106	0.007	0.002	0.10225
1660.00	6.0241	1.939	0.107	0.007	0.002	0.10463
1670.00	5.9880	1.952	0.104	0.007	0.002	0.10647

WN	WL	N	K	DN	DK	R
1680.00	5.9524	1.958	0.105	0.007	0.002	0.10738
1690.00	5.9172	1.966	0.108	0.007	0.002	0.10868
1700.00	5.8824	1.972	0.103	0.007	0.002	0.10952
1710.00	5.8480	1.975	0.108	0.008	0.002	0.11003
1720.00	5.8140	1.982	0.104	0.008	0.002	0.11097
1730.00	5.7803	1.987	0.105	0.008	0.002	0.11178
1740.00	5.7471	1.993	0.103	0.008	0.002	0.11260
1750.00	5.7143	1.996	0.103	0.008	0.002	0.11297
1760.00	5.6818	2.003	0.103	0.008	0.002	0.11399
1770.00	5.6497	2.007	0.104	0.008	0.002	0.11469
1780.00	5.6180	2.011	0.108	0.008	0.002	0.11530
1790.00	5.5866	2.014	0.107	0.008	0.002	0.11582
1800.00	5.5556	2.017	0.105	0.008	0.002	0.11618
1810.00	5.5249	2.022	0.107	0.008	0.002	0.11693
1820.00	5.4945	2.024	0.108	0.008	0.002	0.11727
1830.00	5.4645	2.030	0.110	0.008	0.002	0.11817
1840.00	5.4348	2.030	0.110	0.008	0.002	0.11826
1850.00	5.4054	2.034	0.112	0.008	0.002	0.11877
1860.00	5.3763	2.038	0.113	0.008	0.002	0.11949
1870.00	5.3476	2.040	0.113	0.008	0.002	0.11975
1880.00	5.3191	2.044	0.116	0.008	0.002	0.12044
1890.00	5.2910	2.047	0.117	0.008	0.002	0.12087
1900.00	5.2632	2.052	0.119	0.008	0.002	0.12160
1910.00	5.2356	2.052	0.127	0.008	0.003	0.12190
1920.00	5.2083	2.046	0.125	0.008	0.003	0.12098
1930.00	5.1813	2.052	0.122	0.008	0.003	0.12180
1940.00	5.1546	2.056	0.124	0.008	0.003	0.12240
1950.00	5.1282	2.059	0.126	0.008	0.003	0.12290
1960.00	5.1020	2.063	0.128	0.008	0.003	0.12353
1970.00	5.0761	2.065	0.130	0.008	0.003	0.12383
1980.00	5.0505	2.070	0.132	0.009	0.003	0.12465
1990.00	5.0251	2.073	0.138	0.009	0.003	0.12517
2000.00	5.0000	2.060	0.138	0.008	0.003	0.12332
2010.00	4.9751	2.068	0.130	0.009	0.003	0.12429
2020.00	4.9505	2.076	0.132	0.009	0.003	0.12550
2030.00	4.9261	2.076	0.132	0.009	0.003	0.12552
2040.00	4.9020	2.088	0.131	0.009	0.003	0.12724
2050.00	4.8780	2.091	0.134	0.009	0.003	0.12779
2060.00	4.8544	2.100	0.135	0.009	0.003	0.12919
2070.00	4.8309	2.107	0.139	0.009	0.003	0.13024
2080.00	4.8077	2.110	0.139	0.009	0.003	0.13070
2090.00	4.7847	2.124	0.138	0.009	0.003	0.13280
2100.00	4.7619	2.137	0.144	0.009	0.003	0.13487
2110.00	4.7393	2.152	0.149	0.009	0.003	0.13717
2120.00	4.7170	2.169	0.153	0.010	0.003	0.13978
2130.00	4.6948	2.195	0.161	0.010	0.003	0.14375
2140.00	4.6729	2.214	0.178	0.010	0.004	0.14693
2150.00	4.6512	2.262	0.180	0.011	0.004	0.15394
2160.00	4.6296	2.341	0.220	0.012	0.005	0.16654
2170.00	4.6083	2.453	0.330	0.014	0.007	0.18637

WN	WL	N	K	DN	DK	R
2180.00	4.5872	2.407	0.527	0.014	0.011	0.19181
2190.00	4.5662	2.454	0.897	0.017	0.018	0.23141
2200.00	4.5455	2.021	0.900	0.014	0.014	0.18839
2210.00	4.5249	1.316	1.064	0.013	0.009	0.19195
2220.00	4.5045	1.337	0.261	0.004	0.004	0.03354
2230.00	4.4843	1.626	0.148	0.005	0.003	0.06074
2240.00	4.4643	1.726	0.141	0.005	0.003	0.07453
2250.00	4.4444	1.785	0.128	0.006	0.002	0.08253
2260.00	4.4248	1.826	0.125	0.006	0.002	0.08837
2270.00	4.4053	1.858	0.125	0.006	0.002	0.09311
2280.00	4.3860	1.878	0.127	0.007	0.002	0.09613
2290.00	4.3668	1.894	0.126	0.007	0.002	0.09844
2300.00	4.3478	1.909	0.126	0.007	0.002	0.10063
2310.00	4.3290	1.918	0.129	0.007	0.003	0.10212
2320.00	4.3103	1.925	0.127	0.007		0.10304
2330.00	4.2918	1.936	0.128	0.007		0.10469
2340.00	4.2735	1.942	0.131	0.007	3	0.10571
2350.00	4.2553	1.943	0.130	0.007	.0	0.10577
2360.00	4.2373	1.947	0.126	0.007	0.002	0.10629
2370.00	4.2194	1.957	0.124	0.007	0.002	0.10770
2380.00	4.2017	1.962	0.128	0.007	0.003	0.10858
2390.00	4.1841	1.965	0.126	0.007	0.003	0.10997
2400.00	4.1667	1.970	0.127	0.008	0.003	0.10974
2410.00	4.1494	1.979	0.129	0.008	0.003	0.11106
2420.00	4.1322	1.979	0.131	0.008	0.003	0.11118
2430.00	4.1152	1.983	0.134	0.008	0.003	0.11184
2440.00	4.0984	1.984	0.134	0.008	0.003	0.11201
2450.00	4.0816	1.984	0.142	0.008	0.003	0.11223
2460.00	4.0650	1.983	0.137	0.008	0.003	0.11196
2470.00	4.0486	1.985	0.137	0.008	0.003	0.11226
2480.00	4.0323	1.985	0.137	0.008	0.003	0.11228
2490.00	4.0161	1.991	0.138	0.008	0.003	0.11313
2500.00	4.0000	1.988	0.138	0.008	0.003	0.11262
2510.00	3.9841	1.995	0.136	0.008	0.003	0.11365
2520.00	3.9683	1.995	0.138	0.008	0.003	0.11369
2530.00	3.9526	1.996	0.138	0.008	0.003	0.11385
2540.00	3.9370	1.997	0.137	0.008	0.003	0.11392
2550.00	3.9216	2.001	0.140	0.008	0.003	0.11469
2560.00	3.9063	2.001	0.141	0.008	0.003	0.11464
2570.00	3.8911	2.004	0.143	0.008	0.003	0.11518
2580.00	3.8760	2.002	0.141	0.008	0.003	0.11479
2590.00	3.8610	2.005	0.143	0.008	0.003	0.11536
2600.00	3.8462	2.006	0.144	0.008	0.003	0.11545
2610.00	3.8314	2.006	0.142	0.008	0.003	0.11542
2620.00	3.8168	2.006	0.144	0.008	0.003	0.11553
2630.00	3.8023	2.013	0.146	0.008	0.003	0.11659
2640.00	3.7879	2.009	0.149	0.008	0.003	0.11603
2650.00	3.7736	2.013	0.151	0.008	0.003	0.11677
2660.00	3.7594	2.011	0.155	0.008	0.003	0.11648
2670.00	3.7453	2.007	0.156	0.008	0.003	0.11596

WN	WL	N	K	DN	DK	R
2680.00	3.7313	2.004	0.153	0.008	0.003	0.11550
2690.00	3.7175	2.006	0.151	0.008	0.003	0.11568
2700.00	3.7037	2.006	0.151	0.008	0.003	0.11575
2710.00	3.6900	2.007	0.150	0.008	0.003	0.11588
2720.00	3.6765	2.008	0.149	0.008	0.003	0.11587
2730.00	3.6630	2.010	0.149	0.008	0.003	0.11628
2740.00	3.6496	2.011	0.149	0.008	0.003	0.11640
2750.00	3.6364	2.013	0.150	0.008	0.003	0.11665
2760.00	3.6232	2.013	0.150	0.008	0.003	0.11670
2770.00	3.6101	2.016	0.149	0.008	0.003	0.11709
2780.00	3.5971	2.017	0.151	0.008	0.003	0.11732
2790.00	3.5842	2.019	0.153	0.008	0.003	0.11773
2800.00	3.5714	2.019	0.156	0.008	0.003	0.11776
2810.00	3.5587	2.018	0.158	0.008	0.003	0.11768
2820.00	3.5461	2.016	0.159	0.008	0.003	0.11743
2830.00	3.5336	2.015	0.158	0.008	0.003	0.11721
2840.00	3.5211	2.015	0.157	0.008	0.003	0.11716
2850.00	3.5088	2.016	0.156	0.008	0.003	0.11728
2860.00	3.4965	2.016	0.156	0.008	0.003	0.11738
2870.00	3.4843	2.018	0.156	0.008	0.003	0.11757
2880.00	3.4722	2.019	0.156	0.008	0.003	0.11780
2890.00	3.4602	2.020	0.158	0.008	0.003	0.11797
2900.00	3.4483	2.019	0.159	0.008	0.003	0.11790
2910.00	3.4364	2.019	0.159	0.008	0.003	0.11792
2920.00	3.4247	2.019	0.158	0.008	0.003	0.11792
2930.00	3.4130	2.020	0.158	0.008	0.003	0.11797
2940.00	3.4014	2.021	0.158	0.008	0.003	0.11807
2950.00	3.3898	2.022	0.158	0.008	0.003	0.11824
2960.00	3.3784	2.023	0.158	0.008	0.003	0.11837
2970.00	3.3670	2.024	0.159	0.008	0.003	0.11860
2980.00	3.3557	2.025	0.160	0.008	0.003	0.11882
2990.00	3.3445	2.026	0.162	0.008	0.003	0.11904
3000.00	3.3333	2.026	0.163	0.008	0.003	0.11903
3010.00	3.3223	2.027	0.164	0.008	0.003	0.11915
3020.00	3.3113	2.027	0.165	0.008	0.003	0.11922
3030.00	3.3003	2.027	0.166	0.008	0.003	0.11922
3040.00	3.2895	2.027	0.167	0.008	0.003	0.11922
3050.00	3.2787	2.027	0.168	0.008	0.003	0.11933
3060.00	3.2680	2.026	0.169	0.008	0.003	0.11921
3070.00	3.2573	2.025	0.169	0.008	0.003	0.11912
3080.00	3.2468	2.025	0.169	0.008	0.003	0.11905
3090.00	3.2362	2.025	0.168	0.008	0.003	0.11909
3100.00	3.2258	2.025	0.169	0.008	0.003	0.11906
3110.00	3.2154	2.026	0.167	0.008	0.003	0.11911
3120.00	3.2051	2.027	0.168	0.008	0.003	0.11931
3130.00	3.1949	2.027	0.169	0.008	0.003	0.11935
3140.00	3.1847	2.027	0.169	0.008	0.003	0.11936
3150.00	3.1746	2.028	0.169	0.008	0.003	0.11944
3160.00	3.1646	2.030	0.169	0.008	0.003	0.11975
3170.00	3.1546	2.030	0.171	0.008	0.003	0.11984

WN	WL	N	K	DN	DK	R
3180.00	3.1447	2.029	0.172	0.008	0.003	0.11980
3190.00	3.1348	2.030	0.172	0.008	0.003	0.11989
3200.00	3.1250	2.030	0.173	0.008	0.003	0.11985
3210.00	3.1153	2.029	0.172	0.008	0.003	0.11976
3220.00	3.1056	2.030	0.172	0.008	0.003	0.11994
3230.00	3.0960	2.032	0.172	0.008	0.003	0.12013
3240.00	3.0864	2.033	0.174	0.008	0.004	0.12034
3250.00	3.0769	2.032	0.174	0.008	0.004	0.12025
3260.00	3.0675	2.033	0.174	0.008	0.004	0.12039
3270.00	3.0581	2.035	0.175	0.008	0.004	0.12071
3280.00	3.0488	2.035	0.179	0.008	0.004	0.12083
3290.00	3.0395	2.032	0.180	0.008	0.004	0.12044
3300.00	3.0303	2.031	0.178	0.008	0.004	0.12020
3310.00	3.0211	2.033	0.176	0.008	0.004	0.12045
3320.00	3.0120	2.034	0.177	0.008	0.004	0.12068
3330.00	3.0030	2.035	0.178	0.008	0.004	0.12084
3340.00	2.9940	2.035	0.180	0.008	0.004	0.12096
3350.00	2.9851	2.035	0.181	0.008	0.004	0.12095
3360.00	2.9762	2.035	0.181	0.008	0.004	0.12086
3370.00	2.9674	2.036	0.181	0.008	0.004	0.12107
3380.00	2.9586	2.037	0.183	0.008	0.004	0.12136
3390.00	2.9499	2.036	0.186	0.008	0.004	0.12123
3400.00	2.9412	2.033	0.185	0.008	0.004	0.12084
3410.00	2.9326	2.033	0.184	0.008	0.004	0.12077
3420.00	2.9240	2.034	0.183	0.008	0.004	0.12087
3430.00	2.9155	2.036	0.184	0.008	0.004	0.12115
3440.00	2.9070	2.035	0.185	0.008	0.004	0.12112
3450.00	2.8986	2.036	0.184	0.008	0.004	0.12119
3460.00	2.8902	2.036	0.185	0.008	0.004	0.12126
3470.00	2.8818	2.037	0.185	0.008	0.004	0.12139
3480.00	2.8736	2.037	0.187	0.008	0.004	0.12149
3490.00	2.8653	2.037	0.186	0.008	0.004	0.12139
3500.00	2.8571	2.038	0.187	0.008	0.004	0.12163
3510.00	2.8490	2.038	0.188	0.008	0.004	0.12166
3520.00	2.8409	2.039	0.189	0.008	0.004	0.12184
3530.00	2.8329	2.039	0.190	0.008	0.004	0.12180
3540.00	2.8249	2.037	0.192	0.008	0.004	0.12164
3550.00	2.8169	2.036	0.192	0.008	0.004	0.12140
3560.00	2.8090	2.035	0.190	0.008	0.004	0.12125
3570.00	2.8011	2.036	0.188	0.008	0.004	0.12131
3580.00	2.7933	2.037	0.188	0.008	0.004	0.12146
3590.00	2.7855	2.039	0.188	0.008	0.004	0.12178
3600.00	2.7778	2.039	0.189	0.008	0.004	0.12180
3610.00	2.7701	2.040	0.189	0.008	0.004	0.12188
3620.00	2.7624	2.040	0.189	0.008	0.004	0.12200
3630.00	2.7548	2.043	0.189	0.008	0.004	0.12234
3640.00	2.7473	2.044	0.191	0.008	0.004	0.12263
3650.00	2.7397	2.044	0.193	0.008	0.004	0.12275
3660.00	2.7322	2.044	0.194	0.008	0.004	0.12265
3670.00	2.7248	2.043	0.195	0.008	0.004	0.12256



WN	WL	N	K	DN	DK	R
3680.00	2.7174	2.042	0.193	0.008	0.004	0.12247
3690.00	2.7100	2.044	0.193	0.008	0.004	0.12270
3700.00	2.7027	2.045	0.193	0.008	0.004	0.12290
3710.00	2.6954	2.047	0.195	0.009	0.004	0.12327
3720.00	2.6882	2.047	0.198	0.009	0.004	0.12328
3730.00	2.6810	2.045	0.198	0.008	0.004	0.12299
3740.00	2.6738	2.045	0.197	0.008	0.004	0.12297
3750.00	2.6667	2.047	0.196	0.009	0.004	0.12328
3760.00	2.6596	2.049	0.197	0.009	0.004	0.12355
3770.00	2.6525	2.050	0.200	0.009	0.004	0.12376
3780.00	2.6455	2.049	0.201	0.009	0.004	0.12366
3790.00	2.6385	2.049	0.202	0.009	0.004	0.12375
3800.00	2.6316	2.048	0.203	0.009	0.004	0.12367
3810.00	2.6247	2.049	0.203	0.009	0.004	0.12374
3820.00	2.6178	2.048	0.203	0.009	0.004	0.12358
3830.00	2.6110	2.049	0.202	0.009	0.004	0.12371
3840.00	2.6042	2.050	0.203	0.009	0.004	0.12393
3850.00	2.5974	2.051	0.204	0.009	0.004	0.12408
3860.00	2.5907	2.050	0.205	0.009	0.004	0.12408
3870.00	2.5840	2.050	0.205	0.009	0.004	0.12405
3880.00	2.5773	2.050	0.205	0.009	0.004	0.12406
3890.00	2.5707	2.051	0.205	0.009	0.004	0.12420
3900.00	2.5641	2.052	0.206	0.009	0.004	0.12432
3910.00	2.5575	2.053	0.207	0.009	0.004	0.12445
3920.00	2.5510	2.053	0.207	0.009	0.004	0.12453
3930.00	2.5445	2.054	0.207	0.009	0.004	0.12462
3940.00	2.5381	2.055	0.208	0.009	0.004	0.12483
3950.00	2.5316	2.056	0.210	0.009	0.004	0.12500
3960.00	2.5253	2.056	0.210	0.009	0.004	0.12504
3970.00	2.5189	2.056	0.211	0.009	0.004	0.12510
3980.00	2.5126	2.056	0.212	0.009	0.004	0.12510
3990.00	2.5063	2.056	0.212	0.009	0.004	0.12521
4000.00	2.5000	2.058	0.213	0.009	0.004	0.12543
4016.06	2.4900	2.058	0.215	0.009	0.004	0.12554
4032.26	2.4800	2.058	0.216	0.009	0.004	0.12560
4048.58	2.4700	2.058	0.217	0.009	0.004	0.12568
4065.04	2.4600	2.059	0.218	0.009	0.004	0.12578
4081.63	2.4500	2.059	0.219	0.009	0.004	0.12592
4098.36	2.4400	2.060	0.220	0.009	0.004	0.12604
4115.23	2.4300	2.061	0.220	0.009	0.004	0.12617
4132.23	2.4200	2.061	0.221	0.009	0.004	0.12632
4149.38	2.4100	2.062	0.222	0.009	0.005	0.12648
4166.67	2.4000	2.063	0.223	0.009	0.005	0.12667
4184.10	2.3900	2.064	0.224	0.009	0.005	0.12689
4201.68	2.3800	2.065	0.226	0.009	0.005	0.12708
4219.41	2.3700	2.066	0.227	0.009	0.005	0.12726
4237.29	2.3600	2.067	0.228	0.009	0.005	0.12746
4255.32	2.3500	2.068	0.230	0.009	0.005	0.12767
4273.50	2.3400	2.069	0.232	0.009	0.005	0.12783
4291.85	2.3300	2.069	0.232	0.009	0.005	0.12797

WN	WL	N	K	DN	DK	R
4310.34	2.3200	2.071	0.233	0.009	0.005	0.12819
4329.00	2.3100	2.073	0.235	0.009	0.005	0.12851
4347.83	2.3000	2.075	0.237	0.009	0.005	0.12889
4366.81	2.2900	2.076	0.240	0.009	0.005	0.12924
4385.96	2.2800	2.076	0.243	0.009	0.005	0.12943
4405.29	2.2700	2.076	0.245	0.009	0.005	0.12950
4424.78	2.2600	2.076	0.247	0.009	0.005	0.12954
4444.44	2.2500	2.076	0.248	0.009	0.005	0.12959
4464.29	2.2400	2.077	0.249	0.009	0.005	0.12972
4484.30	2.2300	2.078	0.250	0.009	0.005	0.12991
4504.50	2.2200	2.079	0.251	0.009	0.005	0.13014
4524.89	2.2100	2.080	0.252	0.009	0.005	0.13039
4545.45	2.2000	2.081	0.254	0.009	0.005	0.13064
4566.21	2.1900	2.083	0.255	0.009	0.005	0.13091
4587.16	2.1800	2.085	0.257	0.009	0.005	0.13124
4608.29	2.1700	2.087	0.259	0.009	0.005	0.13163
4629.63	2.1600	2.089	0.261	0.009	0.005	0.13205
4651.16	2.1500	2.091	0.264	0.009	0.005	0.13247
4672.90	2.1400	2.092	0.267	0.009	0.005	0.13286
4694.84	2.1300	2.094	0.270	0.009	0.005	0.13322
4716.98	2.1200	2.095	0.273	0.009	0.006	0.13351
4739.34	2.1100	2.096	0.276	0.009	0.006	0.13378
4761.90	2.1000	2.097	0.278	0.009	0.006	0.13411
4784.69	2.0900	2.099	0.281	0.009	0.006	0.13451
4807.69	2.0800	2.101	0.284	0.009	0.006	0.13495
4830.92	2.0700	2.102	0.288	0.009	0.006	0.13535
4854.37	2.0600	2.104	0.292	0.010	0.006	0.13577
4878.05	2.0500	2.105	0.296	0.010	0.006	0.13618
4901.96	2.0400	2.107	0.300	0.010	0.006	0.13658
4926.11	2.0300	2.108	0.304	0.010	0.006	0.13699
4950.50	2.0200	2.109	0.309	0.010	0.006	0.13748
4975.12	2.0100	2.109	0.315	0.010	0.006	0.13775
5000.00	2.0000	2.107	0.319	0.010	0.006	0.13775
5025.13	1.9900	2.106	0.322	0.010	0.006	0.13776
5050.51	1.9800	2.107	0.324	0.010	0.007	0.13801
5076.14	1.9700	2.109	0.328	0.010	0.007	0.13856
5102.04	1.9600	2.110	0.333	0.010	0.007	0.13894
5128.21	1.9500	2.110	0.338	0.010	0.007	0.13926
5154.64	1.9400	2.111	0.342	0.010	0.007	0.13955
5181.35	1.9300	2.111	0.346	0.010	0.007	0.13990
5208.33	1.9200	2.112	0.351	0.010	0.007	0.14027
5235.60	1.9100	2.113	0.356	0.010	0.007	0.14069
5263.16	1.9000	2.113	0.362	0.010	0.007	0.14108
5291.01	1.8900	2.113	0.367	0.010	0.007	0.14142
5319.15	1.8800	2.111	0.373	0.010	0.007	0.14163
5347.59	1.8700	2.110	0.378	0.010	0.008	0.14175
5376.34	1.8600	2.110	0.382	0.010	0.008	0.14206
5405.41	1.8500	2.111	0.387	0.010	0.008	0.14250
5434.78	1.8400	2.111	0.394	0.010	0.008	0.14296
5464.48	1.8300	2.109	0.401	0.010	0.008	0.14315

WN	WL	N	K	DN	DK	R
5494.51	1.8200	2.107	0.406	0.010	0.008	0.14329
5524.86	1.8100	2.107	0.411	0.010	0.008	0.14362
5555.56	1.8000	2.106	0.418	0.010	0.008	0.14399
5586.59	1.7900	2.104	0.425	0.010	0.008	0.14422
5617.98	1.7800	2.101	0.431	0.010	0.008	0.14432
5649.72	1.7700	2.099	0.437	0.010	0.009	0.14443
5681.82	1.7600	2.096	0.443	0.010	0.009	0.14457
5714.29	1.7500	2.093	0.449	0.010	0.009	0.14461
5747.13	1.7400	2.090	0.455	0.010	0.009	0.14465
5780.35	1.7300	2.086	0.460	0.010	0.009	0.14465
5813.95	1.7200	2.083	0.466	0.010	0.009	0.14470
5847.95	1.7100	2.080	0.472	0.010	0.009	0.14470
5882.35	1.7000	2.076	0.477	0.010	0.009	0.14466
5917.16	1.6900	2.072	0.482	0.010	0.009	0.14460
5952.38	1.6800	2.068	0.488	0.011	0.009	0.14453
5988.02	1.6700	2.064	0.493	0.011	0.009	0.14445
6024.10	1.6600	2.060	0.497	0.011	0.009	0.14435
6060.61	1.6500	2.056	0.502	0.011	0.009	0.14428
6097.56	1.6400	2.052	0.507	0.011	0.010	0.14419
6134.97	1.6300	2.048	0.512	0.011	0.010	0.14409
6172.84	1.6200	2.044	0.516	0.011	0.010	0.14397
6211.18	1.6100	2.040	0.521	0.011	0.010	0.14389
6250.00	1.6000	2.035	0.525	0.011	0.010	0.14377
6289.31	1.5900	2.031	0.530	0.011	0.010	0.14365
6329.11	1.5800	2.028	0.534	0.011	0.010	0.14360
6369.43	1.5700	2.024	0.539	0.011	0.010	0.14360
6410.26	1.5600	2.019	0.545	0.011	0.010	0.14360
6451.61	1.5500	2.014	0.549	0.011	0.010	0.14336
6493.51	1.5400	2.010	0.553	0.011	0.010	0.14320
6535.95	1.5300	2.006	0.557	0.011	0.010	0.14320
6578.95	1.5200	2.002	0.563	0.011	0.010	0.14329
6622.52	1.5100	1.997	0.569	0.011	0.010	0.14325
6666.67	1.5000	1.991	0.573	0.011	0.010	0.14305
6711.41	1.4900	1.986	0.578	0.011	0.010	0.14291
6756.76	1.4800	1.981	0.582	0.011	0.010	0.14279
6802.72	1.4700	1.976	0.587	0.011	0.010	0.14269
6849.32	1.4600	1.970	0.592	0.011	0.010	0.14257
6896.55	1.4500	1.965	0.597	0.011	0.010	0.14242
6944.44	1.4400	1.959	0.601	0.011	0.011	0.14227
6993.01	1.4300	1.954	0.606	0.011	0.011	0.14215
7042.25	1.4200	1.948	0.611	0.011	0.011	0.14205
7092.20	1.4100	1.943	0.616	0.011	0.011	0.14197
7142.86	1.4000	1.937	0.621	0.011	0.011	0.14184
7194.24	1.3900	1.931	0.625	0.011	0.011	0.14171
7246.38	1.3800	1.925	0.630	0.011	0.011	0.14161
7299.27	1.3700	1.918	0.635	0.011	0.011	0.14148
7352.94	1.3600	1.912	0.640	0.011	0.011	0.14137
7407.41	1.3500	1.905	0.645	0.011	0.011	0.14127
7462.69	1.3400	1.899	0.651	0.011	0.011	0.14123
7518.80	1.3300	1.892	0.656	0.011	0.011	0.14116

WN	WL	N	K	DN	DK	R
7575.76	1.3200	1.885	0.662	0.011	0.011	0.14110
7633.59	1.3100	1.877	0.668	0.011	0.011	0.14102
7692.31	1.3000	1.870	0.674	0.011	0.011	0.14098
7751.94	1.2900	1.861	0.680	0.011	0.011	0.14091
7812.50	1.2800	1.853	0.686	0.011	0.011	0.14082
7874.02	1.2700	1.843	0.692	0.011	0.011	0.14069
7936.51	1.2600	1.834	0.698	0.011	0.011	0.14057
8000.00	1.2500	1.824	0.704	0.011	0.011	0.14046
8064.52	1.2400	1.813	0.711	0.011	0.011	0.14030
8130.08	1.2300	1.802	0.717	0.011	0.011	0.14009
8196.72	1.2200	1.789	0.724	0.011	0.011	0.13986
8264.46	1.2100	1.774	0.730	0.011	0.011	0.13933
8333.33	1.2000	1.759	0.733	0.011	0.011	0.13826
8403.36	1.1900	1.745	0.734	0.011	0.010	0.13715
8474.58	1.1800	1.733	0.735	0.010	0.010	0.13630
8547.01	1.1700	1.721	0.739	0.010	0.010	0.13584
8620.69	1.1600	1.706	0.743	0.010	0.010	0.13516
8695.65	1.1500	1.691	0.746	0.010	0.010	0.13434
8771.93	1.1400	1.676	0.748	0.010	0.010	0.13340
8849.56	1.1300	1.659	0.750	0.010	0.010	0.13229
8928.57	1.1200	1.643	0.750	0.010	0.010	0.13102
9009.01	1.1100	1.626	0.750	0.010	0.009	0.12969
9090.91	1.1000	1.609	0.750	0.010	0.009	0.12825
9174.31	1.0900	1.591	0.748	0.010	0.009	0.12673
9259.26	1.0800	1.573	0.746	0.010	0.009	0.12504
9345.79	1.0700	1.555	0.743	0.010	0.009	0.12314
9433.96	1.0600	1.536	0.739	0.010	0.008	0.12098
9523.81	1.0500	1.517	0.733	0.010	0.008	0.11860
9615.38	1.0400	1.498	0.725	0.009	0.008	0.11605
9708.74	1.0300	1.480	0.717	0.009	0.008	0.11332
9803.92	1.0200	1.462	0.708	0.009	0.008	0.11040
9900.99	1.0100	1.445	0.697	0.009	0.007	0.10732
10000.00	1.0000	1.428	0.686	0.009	0.007	0.10414
10101.01	0.9900	1.411	0.673	0.009	0.007	0.10080
10204.08	0.9800	1.395	0.660	0.008	0.007	0.09723
10309.28	0.9700	1.380	0.645	0.008	0.006	0.09351
10416.67	0.9600	1.366	0.629	0.008	0.006	0.08971
10526.32	0.9500	1.353	0.612	0.008	0.006	0.08580
10638.30	0.9400	1.341	0.594	0.008	0.006	0.08172
10752.69	0.9300	1.330	0.574	0.007	0.006	0.07746
10869.57	0.9200	1.321	0.554	0.007	0.006	0.07324
10989.01	0.9100	1.314	0.533	0.007	0.005	0.06903
11111.11	0.9000	1.309	0.512	0.007	0.005	0.06501
11235.96	0.8900	1.307	0.491	0.006	0.005	0.06128
11363.64	0.8800	1.307	0.470	0.006	0.005	0.05785
11494.25	0.8700	1.309	0.451	0.006	0.005	0.05491
11627.91	0.8600	1.313	0.433	0.006	0.005	0.05247
11764.71	0.8500	1.317	0.417	0.006	0.005	0.05039
11904.76	0.8400	1.320	0.401	0.005	0.005	0.04840
12048.19	0.8300	1.325	0.385	0.005	0.005	0.04645

WN				DN	DK	R
12195.12			7	0.005	0.005	0.04476
12345.68			1	0.005	0.005	0.04366
12500.00		1.338	0.338	0.005	0.005	0.04326
12658.23	0.7900	1.372	0.328	0.005	0.005	0.04357
12820.51	0.7800	1.389	0.322	0.005	0.005	0.04459
12987.01	0.7700	1.405	0.320	0.005	0.005	0.04614
13157.89	0.7600	1.420	0.323	0.005	0.005	0.04799
13333.33	0.7500	1.433	0.329	0.005	0.005	0.04995
13513.51	0.7400	1.444	0.337	0.005	0.005	0.05195
13698.63	0.7300	1.453	0.347	0.005	0.005	0.05402
13888.89	0.7200	1.460	0.361	0.005	0.005	0.05614
14084.51	0.7100	1.462	0.376	0.005	0.005	0.05819
14285.71	0.7000	1.460	0.394	0.006	0.006	0.06001
14492.75	0.6900	1.452	0.411	0.006	0.006	0.06135
14705.88	0.6800	1.438	0.426	0.006	0.006	0.06196
14925.37	0.6700	1.421	0.436	0.006	0.006	0.06170
15151.52	0.6600	1.404	0.442	0.006	0.006	0.06103
15384.62	0.6500	1.388	0.448	0.006	0.006	0.06051
15625.00	0.6400	1.370	0.456	0.006	0.006	0.06016
15873.02	0.6300	1.347	0.464	0.006	0.005	0.05973
16129.03	0.6200	1.316	0.471	0.006	0.005	0.05863
16393.44	0.6100	1.276	0.470	0.006	0.005	0.05602
16666.67	0.6000	1.230	0.455	0.006	0.004	0.05117
16949.15	0.5900	1.188	0.425	0.005	0.004	0.04423
17241.38	0.5800	1.155	0.381	0.005	0.003	0.03600
17543.86	0.5700	1.135	0.329	0.004	0.003	0.02769
17857.14	0.5600	1.131	0.275	0.004	0.003	0.02051
18181.82	0.5500	1.140	0.223	0.003	0.002	0.01531
18518.52	0.5400	1.161	0.178	0.002	0.002	0.01254
18867.92	0.5300	1.191	0.143	0.002	0.002	0.01206
19230.77	0.5200	1.224	0.120	0.002	0.002	0.01324
19607.84	0.5100	1.255	0.105	0.002	0.002	0.01527
20000.00	0.5000	1.285	0.098	0.002	0.002	0.01768
20408.16	0.4900	1.311	0.096	0.002	0.002	0.02014
20833.33	0.4800	1.333	0.096	0.002	0.002	0.02240
21276.60	0.4700	1.353	0.096	0.002	0.002	0.02459
21739.13	0.4600	1.375	0.097	0.003	0.002	0.02701
22222.22	0.4500	1.398	0.102	0.003	0.002	0.02980
22727.27	0.4400	1.422	0.110	0.003	0.002	0.03300
23255.81	0.4300	1.450	0.126	0.003	0.002	0.03692
23809.52	0.4200	1.478	0.156	0.004	0.003	0.04175
24390.24	0.4100	1.495	0.204	0.004	0.003	0.04658
25000.00	0.4000	1.488	0.261	0.004	0.004	0.04971
25641.03	0.3900	1.456	0.312	0.005	0.005	0.05073
26315.79	0.3800	1.407	0.351	0.005	0.005	0.04964
27027.03	0.3700	1.341	0.373	0.005	0.005	0.04626
27777.78	0.3600	1.264	0.367	0.005	0.004	0.03959
28571.43	0.3500	1.192	0.326	0.004	0.003	0.02968
29411.76	0.3400	1.147	0.256	0.003	0.003	0.01906
30303.03	0.3300	1.138	0.180	0.002	0.002	0.01143

WN	WL	N	K	DN	DK	R
31250.00	0.3200	1.160	0.118	0.002	0.002	0.00863
32258.06	0.3100	1.196	0.079	0.001	0.001	0.00946
33333.33	0.3000	1.231	0.061	0.001	0.001	0.01165
34482.76	0.2900	1.260	0.054	0.002	0.001	0.01408
35714.29	0.2800	1.280	0.057	0.002	0.001	0.01600
37037.04	0.2700	1.290	0.059	0.002	0.001	0.01703
38461.54	0.2600	1.298	0.056	0.002	0.001	0.01772
40000.00	0.2500	1.312	0.053	0.002	0.001	0.01909
41666.67	0.2400	1.328	0.060	0.002	0.001	0.02086
43478.26	0.2300	1.336	0.075	0.002	0.001	0.02213
45454.55	0.2200	1.335	0.095	0.002	0.002	0.02263
47619.05	0.2100	1.322	0.130	0.002	0.002	0.02278

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## APPENDIX CHEMICAL ANALYSIS

Chemical analyses of the copper, brass, graphite, intercalated graphite, pyrolytic graphite and the TCNQ salts were performed by personnel at the Environmental Trace Substances Research Center, University of Missouri. These analyses are presented in this appendix.

Chemical analyses of the iron, cuprous oxide, and zinc oxide samples were provided by the supplier; Johnson Matthey Chemical Limited. Those analyses are presented herein.

Additional information on the chemical structure and particle shapes and sizes of the TCNQ salts were provided by Dr. E.R. Riley and are included for completeness.



Environmental Trace Substances Research Center  
 Dr. Query - Physics Dept. UMKC  
 (Units are µg/gram unless otherwise indicated)

	84010533 <u>Copper</u>	84010534 <u>Brass 90/10</u>	84010535 <u>Brass 85/15</u>	84010536 <u>Brass 70/30</u>	84010537 <u>Pyrolytic Graphite</u>	84010538 <u>Asbury #3222 Graphite</u>
Ag	<30.	30.	30.	40.	<1.	<1.
Al	60.	900.	9100.	1300.	7.	8300.
As	<100.	<100.	<100.	<100.	<5.	20.
B	<30.	<30.	<30.	<30.	7.	24.
Ba	<3.	<3.	<3.	<3.	0.25	18.
Be	<3.	<3.	<3.	<3.	<0.1	0.54
Bi	<300.	<300.	<300.	<300.	<10.	<10.
Ca	<30.	<30.	<30.	<30.	10.	250.
Cd	<30.	<30.	<30.	<30.	<1.	<1.
Co	<30.	<30.	<30.	<30.	<1.	3.2
Cr	<30.	<30.	<30.	<30.	<1.	17.
Cu	983,000.	909,000.	893,000.	740,000.	21.	27.
Fe	210.	260.	200.	330	75.	9200.
K	<900.	<900.	<900.	<900.	40.	930.
Li	<30.	<30.	<30.	<30.	<1.	2.
Mg	<3.	<3.	<3.	<3.	3.7	1400.
Mn	<3.	<3.	<3.	<3.	0.61	44.
Mo	<100.	<100.	<100.	<100.	<5.	8.
Na	<30.	<30.	<30.	<30.	24.	1300.
Ni	<30.	210.	60.	81.	<1.	17.
P	<300.	<300.	<300.	<300.	<10.	50.
Pb	550.	<100.	520.	100	<5.	20.
Sb	<100.	<100.	<100.	<100.	<10.	<10.
Se	<100.	<100.	<100.	<100.	<10.	<10.
Si	<30.	<30.	<30.	<30.	16.	<1.
Sn	<100.	<100.	<100.	<100.	<10.	<10.
Sr	<3.	<3.	<3.	<3.	<0.1	2.1
Ti	<5.	<5.	<5.	<5.	0.70	260.
Tl	<300.	<300.	<300.	<300.	<1.	60.
V	<30.	<30.	<30.	<30.	<1.	60.
Zn	4720.	102,000.	154,000.	308,000.	3.	25.

Environmental Trace Substances Research Center  
Dr. Querry - Physics Dept. UMKC  
(Units are µg/gram unless otherwise indicated)

	<u>84010539</u> <u>Dixon #1102</u> <u>Graphite</u>	<u>84010540</u> <u>Asbury #260</u> <u>Graphite</u>	<u>84010541</u> <u>Dixon #200-</u> <u>10 Graphite</u>	<u>84010542</u> <u>Dixon</u> <u>#K5-2</u>	<u>84010543</u> <u>Dixon #HPN-</u> <u>2 Graphite</u>	<u>84010544</u> <u>Dixon #600-</u> <u>10 Graphite</u>
Ag	<1.	<1.	<1.	<1.	<1.	<1.
Al	3900.	26.	91.	570.	57.	3600.
As	<5.	<5.	20.	<5.	<5.	<5.
B	21.	43.	20.	11.	11.	23.
Ba	5.9	5.1	2.0	6.0	6.6	97.
Be	0.2	<0.1	<0.1	0.1	<0.1	0.2
Bi	<10.	<10.	<10.	<10.	<10.	<10.
Ca	80.	37.	780.	130.	87.	27.
Cd	<1.	<1.	<1.	<1.	<1.	<1.
Co	2.	<1.	3.6	3.6	<1.	2.
Cr	170.	2.	160.	30.	14.	6.9
Cu	25.	1.	120.	<1.	13.	7.9
Fe	1470.	100.	5070.	1020.	620	1220.
K	170.	<30.	<30.	100.	<30.	460.
Li	<1.	6.7	<1.	3.7	<1.	<1.
Mg	170.	5.3	130.	62.	19.	63.
Mn	8.7	1.6	29.	12.	4.2	140.
Mo	<5.	<5.	10.	<5.	<5.	<5.
Na	140.	49.	58.	38.	27.	87.
Ni	49.	40.	31.	4.9	3.2	<1.
P	<10.	<10.	30.	20.	<10.	20.
Pb	380.	<5.	<5.	<5.	<5.	<5.
Sb	<10.	<10.	<10.	<10.	<10.	<10.
Se	<10.	<10.	<10.	<10.	<10.	<10.
Si	<1.	<1.	4.0	4.0	6.1	1.
Sn	<10.	<10.	<10.	<10.	<10.	<10.
Sr	1.4	0.70	1.2	2.7	1.1	3.2
Ti	58.	5.3	6.4	20.	3.2	7.8
Tl	<10.	<10.	<10.	<10.	<10.	<10.
V	22.	3.6	1.	8.0	6.4	12.
Zn	6.4	<1.	11.	4.2	3.6	1.

Environmental Trace Substances Research Center  
 Dr. Querry - Physics Dept. UMKC  
 (Units are µg/gram unless otherwise indicated)

	84010545 <u>TTF/ TCNQ</u>	84010546 <u>Cu/ TCNQ</u>	84010547 <u>Li/ TCNQ</u>
Ag	<1.	8.	<1.
Al	<5.	10.	15.
As	<5.	<20.	<5.
B	12.	20.	21.
Ba	0.16	2.3	2.5
Be	<0.1	<0.4	<0.1
Bi	<10.	<40.	<10.
Ca	4.5	6.3	21.
Cd	<1.	10.	<1.
Co	<1.	<4.	9.8
Cr	<1.	<4.	<1.
Cu	26.	150,000.	93.
Fe	36.	130.	68.
K	<30.	<100.	<30.
Li	<1.	710.	32,700.
Mg	1.5	5.0	5.8
Mn	<0.1	0.5	0.59
Mo	<5.	<20.	<5.
Na	12.	130.	190.
Ni	<1.	<4.	1.
P	<10.	<40.	<10.
Pb	<5.	50.	<5.
Sb	<10.	<40.	<10.
Se	<10.	<40.	<10.
Si	42.	130.	94.
Sn	<10.	<40.	<10.
Sr	<0.1	<0.4	5.8
Ti	6.6	7.0	1.1
Tl	<10.	<40.	<10.
V	<1.	<4.	<1.
Zn	<1.	40..	5.9



# Certificate of Analysis

Material Zinc Oxide

Batch No. S.83646B

In any reference to this material the above batch number should be quoted.

## Batch Analysis

All concentrations are quoted in parts per million by weight. The symbol < indicates less than.

The techniques employed in the analysis of this particular batch are denoted below by symbols which refer to the techniques indicated on the accompanying sheet.

## Elements sought

— other than matrix constituents.

Ag silver	Cd cadmium	Fe iron	K potassium	Nd neodymium	Rh rhodium	Sr strontium	V vanadium
Al aluminium	Ce cerium	Ga gallium	La lanthanum	Ni nickel	Ru ruthenium	Ta tantalum	W tungsten
As arsenic	Co cobalt	Gd gadolinium	Li lithium	Os osmium	Sb antimony	Tb terbium	Y yttrium
Au gold	Cr chromium	Ge germanium	Lu lutetium	P phosphorus	Sc scandium	Te tellurium	Yb ytterbium
B boron	Cs caesium	Hf hafnium	Mg magnesium	Pb lead	Se selenium	Th thorium	Zn zinc
Ba barium	Cu copper	Hg mercury	Mn manganese	Pd palladium	Si silicon	Ti titanium	Zr zirconium
Ba beryllium	Dy dysprosium	Ho holmium	Mo molybdenum	Pr praseodymium	Sn tin	Tl thallium	
Bi bismuth	Er erbium	In indium	Na sodium	Pt platinum	Sm samarium	Tm thulium	
Ca calcium	Eu europium	Ir iridium	Nb niobium	Rb rubidium		U uranium	

Below is a list of impurity elements commonly associated with this matrix. Against each of these elements is quoted the level of detection using the technique indicated.

## Level of detection

— techniques (a to c) unless otherwise stated.

Al	1	Bi	1	Ce	<1	Cu	<1	U	<1	Mo	2	Ag	<1	Ti	5
Ba	1	B	1	Cr	<1	Fe	1	Mg	<1	Nb	1	Na	<1	V	2
Ba	<1	Cd	<1	Co	5	Pb	1	Mn	<1	Sa	1	Sn	2		

Elements detected	Cadmium	7
	Silicon	2
	Copper	) each less than 1
	Iron	

## Additional analyses

### Anions

Tests are carried out to check for any anionic impurities likely to be present. Those detected are reported below.

### Sample pretreatment

Prior to analysis all fabricated metals are etched in acid to remove any trace superficial contaminants.

## Johnson Matthey Chemicals Limited

Osborne Road, Royston, Hertfordshire SG8 5HF, England  
Telephone: Royston (0763) 44181 Telex: 817351



Approved by  
Chief Analyst

*P. J. G. G. G.*

# Certificate of Analysis

Material Iron Rod

Batch No. 07018

In any reference to this material the above batch number should be quoted.

## Batch Analysis

All concentrations are quoted in parts per million by weight. The symbol < indicates less than.

The techniques employed in the analysis of this particular batch are denoted below by symbols which refer to the techniques indicated on the accompanying sheet.

## Elements sought

— other than matrix constituents

Ag silver	Cd cadmium	Fe iron	K potassium	Nd neodymium	Rh rhodium	Sr strontium	V vanadium
Al aluminium	Ce cerium	Ga gallium	La lanthanum	Ni nickel	Ru rhodium	Ta tantalum	W tungsten
As arsenic	Co cobalt	Gd gadolinium	Li lithium	Os osmium	Ru ruthenium	Tb terbium	Y yttrium
Au gold	Cr chromium	Ge germanium	Lu lutetium	P phosphorus	Sb antimony	Te tellurium	Yb ytterbium
B boron	Cs caesium	Hf hafnium	Mg magnesium	Pb lead	Sc scandium	Th thorium	Zn zinc
Ba barium	Cu copper	Hg mercury	Mn manganese	Pd palladium	Se selenium	Ti titanium	Zr zirconium
Ba beryllium	Dy dysprosium	Ho holmium	Mo molybdenum	Pr praseodymium	Si silicon	Tl thallium	
Bi bismuth	Er erbium	In indium	Na sodium	Pt platinum	Sm samarium	Tl thulium	
Ca calcium	Eu europium	Ir iridium	Nb niobium	Rb rubidium	Sr strontium	U uranium	

Below is a list of impurity elements commonly associated with this matrix. Against each of these elements is quoted the level of detection using the technique indicated.

## Level of detection

— techniques (a to c) unless otherwise stated.

Al	1	Bi	2	Ce	1	Cu	1	Mg	<1	Ni	1	Na	1	V	1
As	1	B	5	Cr	<1	Pb	5	Mn	<1	Si	1	Sn	3	Zn	1(4)
Se	<1	Cd	1	Co	3	Li	<1	Mo	2	Ag	<1	Ti	2		

Elements detected	Nickel	3
	Chromium	2
	Silicon	1
	Silver	1
	Aluminium )	
	Copper ) each less than	1
	Magnesium )	
	Manganese )	

## Additional analyses

## Anions

Tests are carried out to check for any anionic impurities likely to be present. Those detected are reported below.

## Sample pretreatment

Prior to analysis all fabricated metals are etched in acid to remove any trace superficial contaminants.

Johnson Matthey Chemicals Limited

Orchard Road, Royston, Hertfordshire SG8 5HE, England  
Telephone: Royston (0763) 44161 Telex: 817351



Approved by  
Chief Analyst

*[Signature]*

# Certificate of Analysis

Material Cuprous Oxide

Batch No. B91534

In any reference to this material the above batch number should be quoted.

## Batch Analysis

All concentrations are quoted in parts per million by weight. The symbol < indicates less than.

The techniques employed in the analysis of this particular batch are denoted below by symbols which refer to the techniques indicated on the accompanying sheet.

## Elements sought

— other than matrix constituents.

Ag silver	Cd cadmium	Fe iron	K potassium	Nd neodymium	Rh rhodium	Sr strontium	V vanadium
Al aluminium	Ce cerium	Ga gallium	La lanthanum	Ni nickel	Ru rhodium	Ta tantalum	W tungsten
As arsenic	Co cobalt	Gd gadolinium	Li lithium	Os osmium	Ru ruthenium	Tb terbium	Y yttrium
Au gold	Cr chromium	Ge germanium	Lu lutetium	P phosphorus	Sb antimony	Te tellurium	Yb ytterbium
B boron	Cs caesium	Hf hafnium	Mg magnesium	Pb lead	Sc scandium	Th thorium	Zn zinc
Ba barium	Cu copper	Hg mercury	Mn manganese	Pd palladium	Se selenium	Ti titanium	Zr zirconium
Be beryllium	Dy dysprosium	Ho holmium	Mo molybdenum	Pr praseodymium	Si silicon	Tl thallium	
Bi bismuth	Er erbium	In indium	Na sodium	Pt platinum	Sm samarium	Tm thulium	
Ca calcium	Eu europium	Ir iridium	Nb niobium	Rb rubidium	Sn tin	U uranium	

Below is a list of impurity elements commonly associated with this matrix. Against each of these elements is quoted the level of detection using the technique indicated.

## Level of detection

— techniques (a to c) unless otherwise stated.

Specific data not yet available for this particular material

Elements detected	Silicon	10
	Sulfur	1
	Calcium	less than 1

## Additional analyses

### Anions

Tests are carried out to check for any anionic impurities likely to be present. Those detected are reported below.

### Sample pretreatment

Prior to analysis all fabricated metals are etched in acid to remove any trace superficial contaminants

Johnson Matthey Chemicals Limited

Orchard Road, Royston, Hertfordshire SG8 5HE, England  
Telephone: Royston (0763) 44161 Telex: 817351



Approved by  
Chief Analyst

*[Signature]*

Work Continued

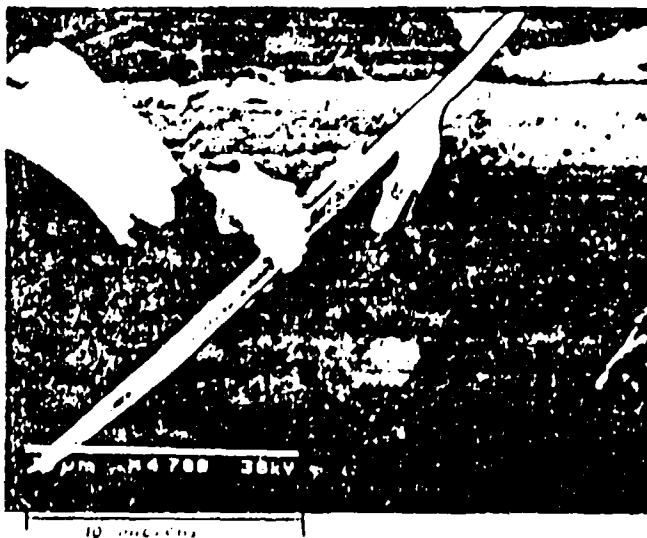
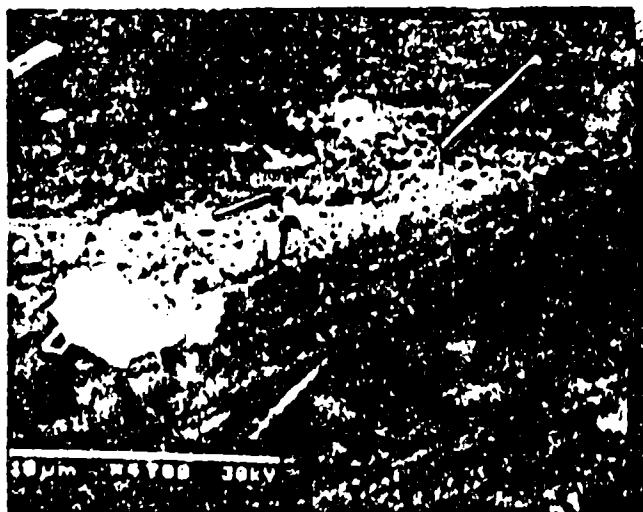
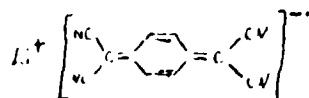
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Project No. \_\_\_\_\_

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Lithium tetracyanoquinodimethane

LiTCNQ



Work Continued

on Page \_\_\_\_\_

Witnessed and Understood:

1. \_\_\_\_\_  
Name Date

2. \_\_\_\_\_  
Name Date

Work done by \_\_\_\_\_  
Date

\_\_\_\_\_  
Date



from Page \_\_\_\_\_



LITCNR

Pages 41 and 43 show 2.17 μm (Amray 200) of LITCNR. While examining these crystals at 30 kV, the crystals could begin to decompose due to the energy they were being subjected to. The pictures on page 54 were taken at 30 kV as well, but showed no signs of thinning or melting. I would expect a computerized disk to behave like the shiny solid shown on page 54. The starting material for the product shown on 54 was from the same production batch as that shown on 41 and 43.

Work Continued

on Page \_\_\_\_\_

Witnessed and Understood:

1. \_\_\_\_\_  
Name DateWork done by \_\_\_\_\_  
Date2. \_\_\_\_\_  
Name Date\_\_\_\_\_  
Date

January 13, 1983 SEM photos (JHU)

TIF-TCNA prepared 1/83 - from batch sent to McQuerry

Darker reproduction  
of same page

Large (a)



Small (b)



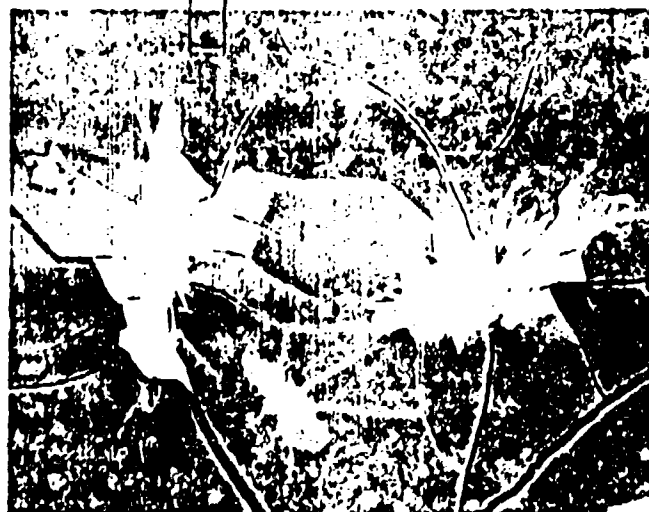
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1. \_\_\_\_\_ Date \_\_\_\_\_
2. \_\_\_\_\_ Name \_\_\_\_\_ Date \_\_\_\_\_

LiTCXO - powdered in water let sit blue disk - solid, shiny

10 microns



Carbon  
paint  
on  
substrate

LiTCXO was dissolved in water -  
the water was allowed to  
evaporate to leave a solid,  
reflective disk. The picture  
is of the surface of the  
disk after fracture.

10 microns



This is a large  
fissure in the  
sample shown above.

pictures are  
from 101-60  
SEM

Work Continued  
on Page

1. _____	_____	Work done by _____	_____
	Name		Date
2. _____	_____	_____	_____
	Name		Date